SONY

COLOR VIDEO CAMERA

DXC-190

SERVICE MANUAL

1st Edition

ExwaveHAD™

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Manual Structure

Purpose of this manual

This manual is the Service Manual of the color video camera DXC-190.
This manual contains the operating instructions, service overview, operational description, electrical alignment, spare parts, semiconductor pin assignments, block diagrams, schematic diagrams and board layouts.

Related manuals

In addition to this Service Manual, the following manuals are provided for this unit.

- **Operating Instructions (Supplied with the DXC-190)**
  This manual is required for the proper operation and application of this unit. Part of the Operating Instructions is included also in this Service Manual, in Section 1, “Operating Instructions” .
  Part number: 3-205-662-11

- **“Semiconductor Pin Assignments” CD-ROM (Available on request)**
  This “Semiconductor Pin Assignments” CD-ROM allows you to search for semiconductors used in Communication System Solutions Network Company equipment.
  Semiconductors that cannot be searched for on this CD-ROM are listed in the service manual for the corresponding unit. The service manual contains a complete list of all semiconductors and their ID Nos., and thus should be used together with the CD-ROM.
  Part number: 9-968-546-XX

Reprinted from the operating instructions

SONY

3-205-662-**11** (1)

Color Video Camera

Operating Instructions

Before operating the unit, please read these instructions thoroughly and retain them for future reference.

Mode d'emploi

Avant de faire fonctionner cet appareil, lisez attentivement le présent mode d'emploi et conservez-le pour toute référence ultérieure.

***Exwave*HAD**™

DXC-190

 Printed in Japan

Owner's Record

The model and serial numbers are located on the top.
Record these numbers in the spaces provided below.
Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____ Serial No. _____

W ARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

The graphical symbol is on the unit.
This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device requires shielded interface cable to comply with FCC emission limits.
You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

AVERTISSEMENT

Afin d'éviter tout risque d'incendie ou d'electrocution, ne pas exposer cet appareil à la pluie ou à l'humidité.

Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

English

Features

This DXC-190 color video camera is equipped with a 1/2type Exwave HAD™* (Exwave Hole-Accumulated Diode) CCD (Charge Coupled Device), and also has the following features:

- High sensitivity (Minimum illumination: 0.8 lux, F 1.2)
- CCD-IRIS function
- Automatic white balance tracking and adjustment
- 8-level electronic shutter
- External synchronization
- Auto-iris lens controlled by video signal or DC power supply
- Automatic backlight compensation through Smart Control™* (operates when AGC switch is in the “ON” position)
- Power multiplex feature

* Exwave HAD™ and Smart Control™ are registered trademarks of Sony Corporation.

Notes on Use

Power supply

The DXC-190 must always be operated with a DC 12 V power supply* or the CMA-D2 camera adaptor (not supplied), the YS-W170/W270 camera adaptor (not supplied).

* In the U.S.A., use a UL-listed class 2 power supply. In Canada, use a CSA-certified Class 2 power supply.

Handling

Be careful not to spill water or other liquids on the unit, or allow combustible or metallic objects to fall inside the body. If used with foreign matter inside, the camera is liable to fail, or be a cause of fire or electric shock.

Operation and storage locations

Avoid aiming the camera at very bright objects such as the sun or electric lights for an extended period. Avoid operating or storing the unit in the following locations.

- Extremely hot or cold places (operating temperature –10 °C to + 50 °C (14 °F to 122 °F))
- Damp or dusty places
- Where it is exposed to rain
- Where it is subject to strong vibration
- Close to generators of powerful electromagnetic radiation such as radio or TV transmitters.
- Where it is subject to fluorescent light reflections
- Where it is subject to unstable (flickering, etc.) lighting conditions.

Care of the unit

- Remove dust or dirt on the surface of the lens or CCD with a blower.
- Use a dry, soft cloth to clean the body. If it is very dirty, use a cloth dampened with a small quantity of neutral detergent, then wipe dry.
- Avoid using volatile solvents such as thinners, alcohol, benzene, and insecticides. They may damage the surface finish and/or impair the operation of the camera.

Other

- When using automatic backlight compensation, hunting may occur.
- If you use the CCD-IRIS function in locations where the camera is exposed to fluorescent light, a slow color change may occur.
- If AGC is turned on while in the TURBO mode, bright objects may be colored.

In the event of any problems with the operation of the camera, contact your Sony dealer.

Location and Function of Parts

Top/Front/Side — Illustration A

❶ Flangeback adjustment ring and locking screw
Use this ring to adjust the flangeback (the distance between the lens mounting plane and the image plane).
Use the locking screw to lock the focal length.

❷ Tripod adaptor
The tripod adaptor can be attached to either the top or bottom of the camera using the four attached screws (1/4" UNC-20, length = 4.5 ±0.2 mm).

❸ AGC (automatic gain control) ON/OFF switch
The automatic gain function automatically adjusts picture gain in accordance with the brightness of the subject.

❹ Gain up switch
Switching the Gain up switch to the TURBO mode while the AGC switch ❸ is on increases gain by up to 6 dB over the NORM (normal) mode.

❺ BLC (backlight compensation) ON/OFF switch
When switched on, this function adjusts exposure to compensate for situations where the subject is lit from behind.

❻ SHUTTER ON/OFF switch
Turning the switch on enables the 8-level electronic shutter and the CCD IRIS.

❼ White Balance Mode switch
AWB (Auto White Balance): Set WHT BAL A to 1; B to 1.
The LOCK button ⓮ can be used in this mode. This switch sets the appropriate white balance if the adjustment setting has been set in the memory.
5600 K (Fixed mode): Set WHT BAL A to 0; B to 1
White balance mode for daylight.
ATW (Auto Tracing White balance): Set WHT BAL A to 1; B to 0.
The camera automatically adjusts the white balance according to the color temperature of the light source. This is particularly effective if the white balance is not functioning in the ATWpro mode.
ATWpro (Auto Tracing White balance Pro): Set WHT BAL A to 0; B to 0.
The unit automatically adjusts the white balance according to the color temperature (2500 K–6000 K) of the light source.

❽ Aperture switch
Set in the “SHARP” mode to sharpen the outline and produce a clearer picture.

❾ 0–180 switch
When VBS is locked, you can change the range by adjusting the subcarrier phase.

❿ Shutter Speed/CCD IRIS Mode switch
By setting the rotary switch, you can set the shutter speed (0–7) and the CCD IRIS mode (8, 9). If the SHUTTER ON/OFF switch ❻ is OFF, this switch is disabled.
0:1/60, **1**:1/100, **2**:1/250, **3**: 1/500, **4**:1/1000, **5**:1/2000, **6**: 1/4000, **7**: 1/10000, **8**: Normal CCD IRIS function, **9**: CCD IRIS with forced backlight compensation

⓫ AE SPOT switch
By setting the rotary switch (0–7), you can set the image frame for the automatic exposure control. (See Illustration C. The shaded part indicates the image frame that has been set.)
0: Whole screen, **1**: Center (small), **2**: Lower left, **3**: Lower right, **4**: Center (bottom), **5**: Upper left, **6**: Upper right, **7**: Center (Large)
When an image frame is selected (1–7 on the rotary switch), the frame is displayed for 1 second on the monitor screen. The rotary switch settings 8 and 9 have the following function (the image frame mode is fixed to Full Screen):
8: Forced backlight compensation, **9**: Excessive forward light compensation

⓬ PHASE volume
You can adjust the horizontal/vertical phase shift.

⓭ SC PHASE (Sub Carrier Phase) volume
With the 0–180 switch ❾, you can adjust a burst phase shift when VBS is locked.

Note

If you use the camera with multiplexed power sources, you cannot lock VBS. You can lock VS with the multiplexed power sources.

⓮ AWB LOCK button
If the White Balance Mode switch ❼ has been set to AWB, and if the all of the monitor screen displays a white object, this button automatically adjusts the white balance according to the color temperature of the light source; the adjustment setting is saved in the memory.

⓯ Auto-iris lens selection switch (DC/VIDEO)

Switch for selecting the control signal for the auto-iris lens.

DC: For auto-iris lenses controlled by DC signals

VIDEO: For auto-iris lenses controlled by video signals

Notes

- When the DC/VIDEO switch is set to VIDEO, the backlight compensation function may not work properly.
- When the DC/VIDEO switch is set to VIDEO, “hunting” may occur. If this occurs, use the LEVEL L/H adjustment screw on the lens to change the incident light level. When adjusting the incident light level, set the ALC (Automatic Light Control) adjustment screw to Av.

⓰ Lens connector (4-pin socket)

Supplies power and control signals to an auto-iris lens (not supplied).

⓱ Lens mount

Use to mount an appropriate C-mount or a CS-mount lens. To attach a C-mount/CS-mount lens, turn the flangeback adjustment ring ❶ to the appropriate position. The factory setting is C mount.

Rear B

⓲ Power indicator

⓳ DC IN (power input)**/VS IN** (external synchronization signal input)**/VIDEO OUT** (composite video signal output) or **VIDEO OUT connector** (BNC type)

⓴ MONITOR OUT (monitor output) or **VBS IN/VS IN** (external synchronization signal input) **connector** (BNC type)

㉑ DC 12 V (power input) **terminal (DC 12 V ±10%)**

㉒ S VIDEO OUT connector

Y/C output connector

㉓ Mode (power mode) **change switch**

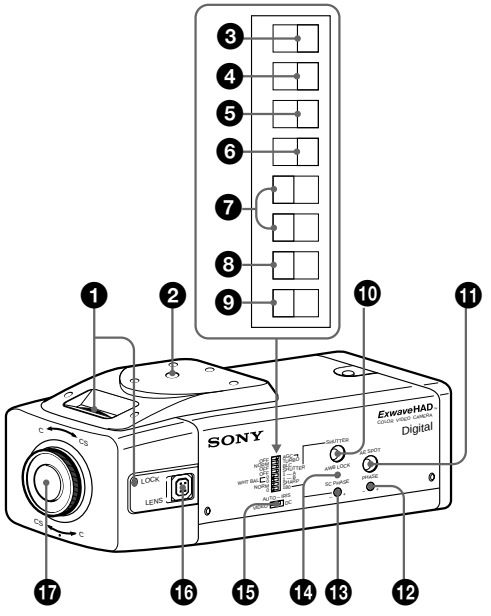
Power source changes as follows.

MODE ㉓	Connector ⓳	Connector ⓴	Power source
A	DC IN/VS IN/ VIDEO OUT	MONITOR OUT	YS-W170/W270
B	VIDEO OUT	VBS/VS IN	DC 12 V or CMA-D2

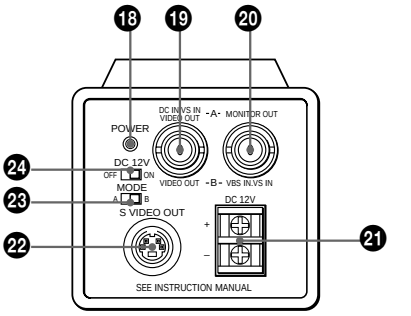
㉔ DC 12 V power supply switch

Use this switch to turn the power supply on and off. When using a DC 12 V power supply, set this switch to ON. This switch does not function when using YS-W170/W270 camera adaptor (not supplied).

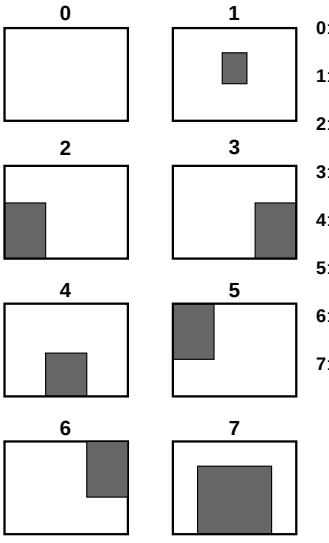
A



B



C



0: Whole screen/ Totalité de l’écran

1: Center (small)/ Centre (petit)

2: Lower left/ Bas gauche

3: Lower right/ Bas droite

4: Center (bottom) Centre (bas)/

5: Upper left/ Haut gauche

6: Upper right/ Haut droite

7: Center (large)/ Centre (grand)

Installation

Suitable lenses D

The lens must be either a C- or a CS-mount type of less than 1 kg. The protrusion behind the mounting surface must be within the following limits:
❶ C-mount lens, ❷ 9 mm or less, ❸ CS-mount lens, ❹ 4 mm or less

Changing the plug on an auto-iris lens cable E

The camera is supplied with a plug to fit the LENS connector. To connect an auto-iris lens, first replace the plug on the lens cable with the supplied plug.

1 Detach the old plug from the lens cable.
2 Solder the lens cable to the pins of the supplied plug. (For cable pin assignment, refer to the instruction manual for the lens.)

❶	Cover		
❷	Lens cable		
❸	Rib (If the cable is thick, cut this off.)		
❹	Plug (unit accessory)		
❺	Pin 4	Video signal control	Ground
		DC control	Ground
❻	Pin 2	Video signal control	Not used
		DC control	Control +
❼	Pin 1	Video signal control	Power supply (DC 9 V, 50 mA)
		DC control	Control –
❽	Pin 3	Video signal control	Video signal
		DC control	Drive +

Fitting the lens F

1 Unscrew the lens mount cap.
2 Screw in the lens, and turn it until it is secured.
3 Insert the lens plug in the LENS connector.
When fitting a manual-iris lens, omit step 3.
4 Adjust the flangeback by turning the C/CS adjustment ring.
5 Tighten the locking screw.

Caution

When mounting the lens, loosen the securing nut on the side and turn the flangeback adjustment to the “C” position. Mounting a C-mount lens with the adjustment ring in the “CS” position may damage the optical filter. Keep the lens mount cap on the camera when not attaching a lens.

Installing the camera

When mounting the camera on a tripod, attach the tripod adaptor to either the top or bottom of the camera. Use a 1/4" UNC-20 screw to mount the camera on a tripod.

Fitting the camera tripod adaptor G

1 Loosen screws ①–④ that secure the tripod adaptor. Remove the adaptor carefully, and do not pull at the screws.
2 Remove screws ⑤ and ⑥.
3 Attach the tripod adaptor on the opposite side, and insert screws ⑤ and ⑥ on the surface from which the adaptor was removed.

Connections

Using a DC 12 V power supply

Set the MODE switch (mode change switch) to B. When the connections have been made, set the DC 12 V power supply switch to ON.

Notes

- To prevent short circuits, do not let the exposed ends of the mains lead wires touch each other when connecting to the mains lead terminals.
- If you use the CMA-D2 camera adaptor (not supplied), you will need the camera cable CCMC-200/200YC (not supplied). For further details, see the cable manual.

Using an external synchronization signal H

① DXC-190 (rear)
② VIDEO OUT connector
③ 75-ohm coaxial cable
④ VIDEO INPUT connector
⑤ VS IN connector
⑥ Synchronization output connector
⑦ Synchronization signal (e.g., switcher)
⑧ Power supply
⑨ DC 12 V switch (set to ON)
⑩ MODE switch (set to B)
⑪ +12 V
⑫ GND (ground)

Using an internal synchronization signal H

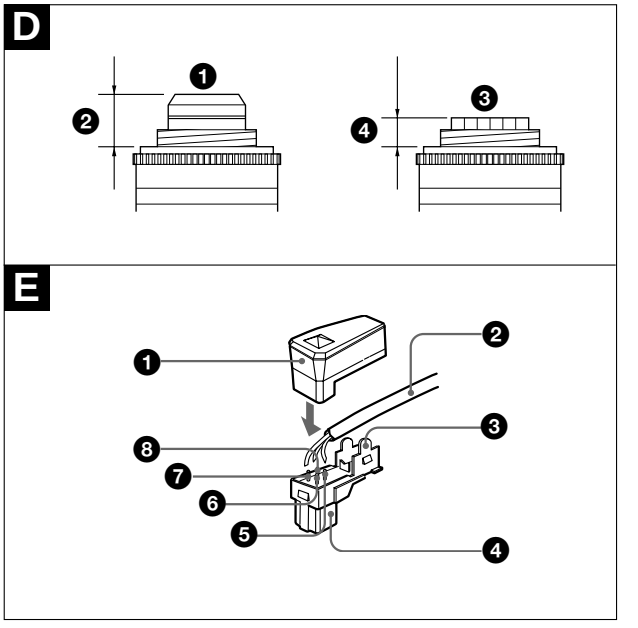
To operate with an internal synchronization signal, no connection to the synchronization signal source (⑤, ⑥ and ⑦ above) is necessary.

Using a YS-W170/W270 camera adaptor (not supplied) (Power multiplex) I

Set the MODE switch (mode change switch) to A. When the connections have been made, set the YS-W170/W270 power supply switch to ON.

① DXC-190 (rear)
② DC IN. VS IN/VIDEO OUT connector
③ CAMERA IN connector
④ MONITOR OUT connector
⑤ VIDEO INPUT connector
⑥ YS-W170/W270 camera adaptor (rear)*
⑦ VIDEO OUT connector
⑧ VIDEO INPUT connector (monitor input connector)
⑨ Portable monitor
⑩ 75-ohm coaxial cable
⑪ MODE switch (set to A)

* The figure shows the YS-W170 camera adaptor.



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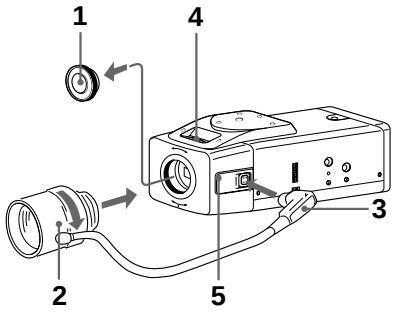
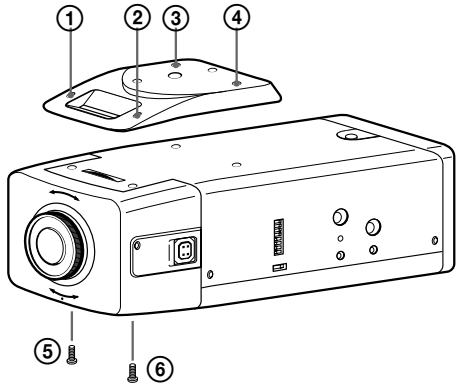
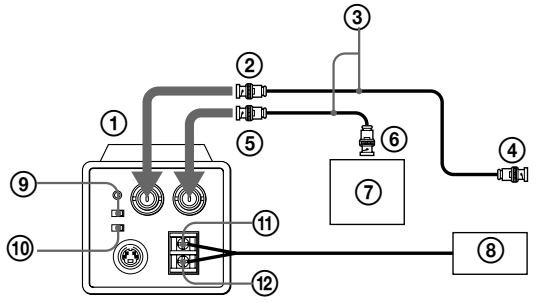


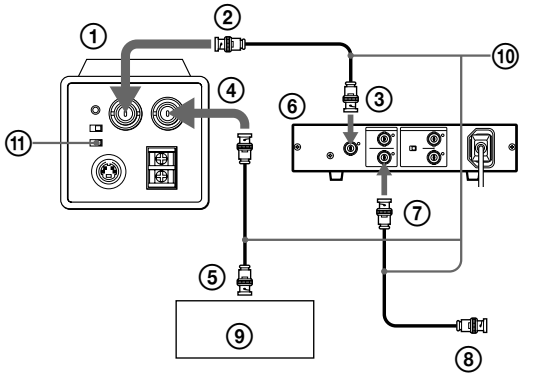
G



H



I



Phase Adjustment

When using more than one camera, adjust the phase according to the following procedure.

Horizontal phase (VS/VBS lock mode)
The picture may shift horizontally when using an extended cable. Use the PHASE volume to adjust the horizontal phase.

CCD Characteristics

The following conditions may be observed when using a CCD camera. They are not due to any fault within the camera.

Vertical smear
This phenomenon occurs when viewing a very bright object.

Patterned noise
This is a fixed pattern that may appear over the entire monitor screen when the camera is operated at high temperatures.

Jagged picture
When viewing stripes, straight lines, or similar patterns, the image on the screen may appear jagged.

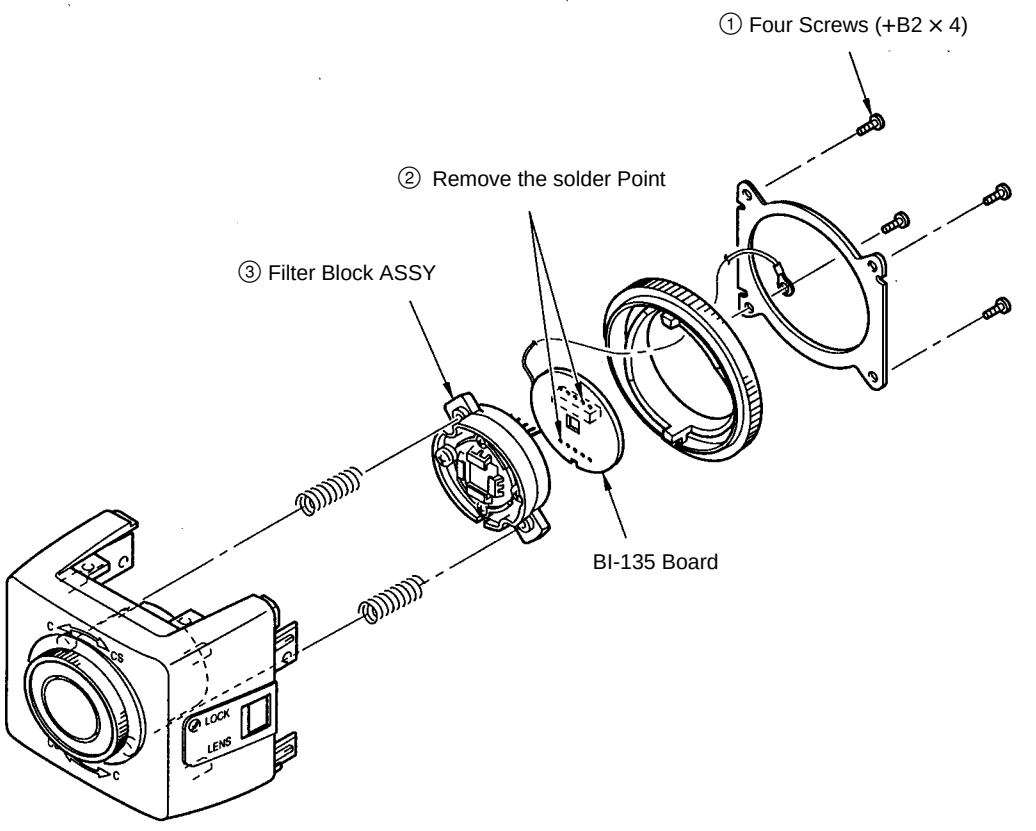
Specifications

Image device	1/2type interline transfer CCD
Effective picture elements	768 (horizontal) × 494 (vertical)
Lens mount	C-mount/CS-mount adjustable
Signal system	NTSC color system
Synchronization system	internal/external (switched automatically)
External synchronization signal	VBS/VS (sync level: 0.3–5.0 Vp-p, 75 ohm)
Horizontal resolution	470 TV lines
Minimum illumination	0.8 lux, F 1.2 (with AGC set to ON in TURBO mode)
Video output	1 Vp-p, 75 ohm, negative sync
Video S/N	50 dB or more (with AGC set to OFF, Weight ON)
Electronic shutter	8 levels 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
White balance	AWB/5600K/ATW/ATWpro (switchable)
Automatic gain control (AGC)	ON/OFF switchable
Power requirements	DC 12 V ±10% (DC 12 V for power source) DC 24 V ±5 V (when YS- W170/W270 is in use)
Power consumption	4.5 W (DC 12 V for power source) 5.5 W (when YS-W170/W270 is in use)
Operating temperature	–10 °C to +50 °C (14 °F to 122 °F)
Operating humidity	20 to 80%
Storage temperature	–40 °C to +60 °C (–40 °F to 140 °F)
Storage humidity	20 to 95%
Shock resistance	70 G
Mass	600 g (1 lb 5 oz)
Dimensions	64 × 57 × 137 (w/h/d) mm (2 5/8 × 2 1/4 × 5 1/2 inches)
Supplied accessories	4-pin plug for auto-iris lens (1) Lens mount cap (1) Operating Instructions (1)

Design and specifications are subject to change without notice.

Section 2
Service Overview

2-1. Removal of Filter Block ASSY



2-2. Initial Switch Setting

[ ] : **factory setting**

- **Rear panel (CT-194 Board)**

SW501	DC12V	[OFF]	↔	ON
SW502	MODE	A	↔	[B]

- **Side panel (FC-75 Board)**

SW401	AUTO-IRIS	[VIDEO]	↔	DC
SW403	SHUTTER	[0]		
SW404	AE SPOT	[0]		

SW405	AGC	OFF	↔	[AGC]
	TURBO	NORM	↔	[TURBO]
	BLC	OFF	↔	[BLC]
	SHUTTER	[OFF]	↔	SHUTTER
	WHT BAL A	[0]	↔	1
	B	[0]	↔	1
	SHARP	[NORM]	↔	SHARP
	SC PHASE	[0]	↔	180

- **C/CS adjusting ring** [C] ↔ CS

2-3. Compensation of Residual Point Noise

Description:

If an accrued white dot (Residual Point Noise) of the CCD is visible, compensate it.

However, the compensation is limited up to two points.

Tools Required:

Remote Commander, RM-95 : J-6082-053-B 1pc

Board for Interface Tool : J-6430-530-A 1pc

Procedure:

1. Connect the service tool to a camera. And turn on the camera.
2. Set the camera to AGC TURBO and close the lens.
3. Press the FOCUS key on the remote commander to enter into the compensation set mode.
4. When the marker does not appear on a screen, align the X-axis of coordinate with 00 with the FF key.
5. When the marker does not still appear, align the Y-axis of coordinate with 00 with the PLAY key.
6. If the marker still does not appear, repeat steps 3 and 4.
7. Align the marker with a point to be compensated by pressing PLAY, STOP, REW or FF key. At this moment, the marker numbers shown below appear on the LCD. The marker number (from left to right) X-axis of coordinate : lower 2 digits, Y-axis of coordinate : lower 2 digits
8. Press the FOCUS key to confirm that the point is compensated.
9. If not compensated, press the FOCUS key and repeat steps 6 and 7.
10. In case that there are two points to be compensated, press the FOCUS key first and then the REC REVIEW key to switch the marker. And repeat steps 6 and 7.
11. After completion of compensation, turn on the camera and confirm that the desired points are compensated. If not, repeat steps 1 through 11.

Table : Key Map of RM-95

KEY	Function
FOCUS	Compensation Set Mode Switch
REC REVIEW	Switch-over of Setting
PAUSE	Save of Setting
REC	Selection of Compensation Element (1 element comp. 2 elements comp.)
AUTO/MANU	Display of a presently set point blinking.
PLAY	Marker moves upward.
STOP	Marker moves downward.
REW	Marker moves in left direction.
FF	Marker moves in right direction.

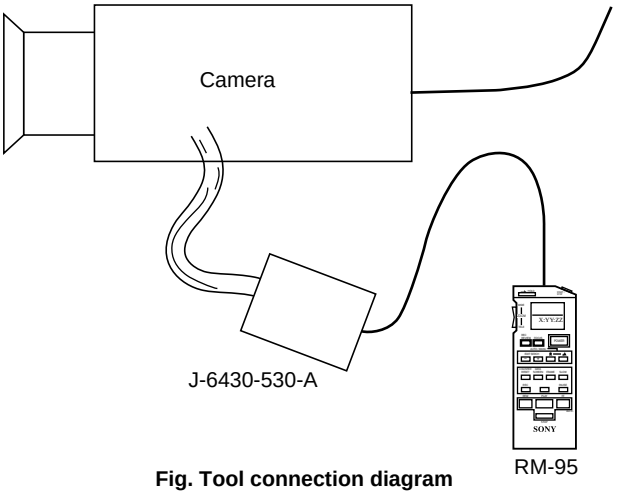
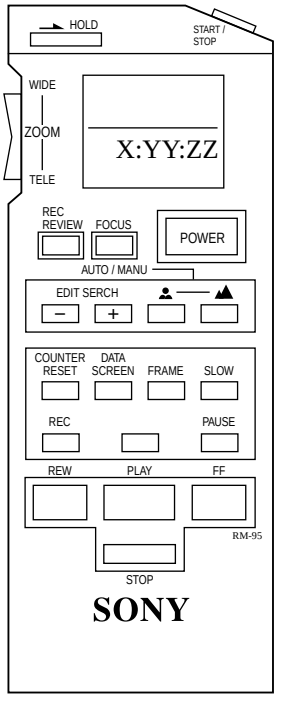


Fig. Tool connection diagram



Section 3
Operational Description

3-1. BI-135 Board

The signal (IC101 pin 10) output from the CCD imager (IC101) passes through the buffer (Q101), and it is output to the PR-229 board from CN101 pin 2. H1, H2, and V1, V2, V3, V4 pulses are CCD drive pulses supplied from the PR-229 board.

3-2. PR-229 Board

(1) Main signal processing circuits

The CCD-OUT signal (CN202 pin 13) from the BI-135 board is input to IC203 pins 25 and 26, then it is subjected to the correlative double sampling (CDS), and further it is amplified in the AGC circuit and output from the pin 8. Then, it is input to the IC209 pin 39, and A/D conversion is executed.
10 bits of A/D output (IC209 pins 1-5, 8-12) are input to the DSP CORE signal processing circuit (IC212 pins 94-85). After digital signal processing, D/A conversion is executed, and analog Y and C output signals are attained (IC212 pin 20: Y, pin 21: C).
These Y and C signals pass through the filters respectively (FL202: Y, FL201: C), then they are added, passed through amplifier (IC226), and output from CN203 pin 10 and 12.

(2) Microcomputer peripheral circuits

The microcomputer (IC217) sets all parameters for digital signal processing circuit (in IC212), and saves some data in the E^2PROM (IC215).
Also, it makes a digital control of analog data through D/A converter (IC210).

(3) CCD drive pulse signal circuits

Receiving main clock of 28 MHz, the timing generator (IC206) generates the CCD drive pulses and the pulses for sample hold.
Also, a synchronizing signal necessary for the timing generator is got from the sync. signal generator in the IC212.

(4) External Synchronizing circuits

This camera can operate with the VBS/VS sync and MPX-VS sync.

(VBS) A burst signal is extracted from the sync source VBS signal entered from CN203-14 pin to detect whether a burst is present or not (VBS or VS). If a burst signal is detected. It is entered to the IC212-61 pin. The output of phase comparison with internal subcarrier (IC212-47 pin) is reflected to the internal subcarrier VCXO (near X203) through LPF at the IC219 periphery. Also, sync source signal is entered to the IC212-60 pin to comprise VReset/H-PLL. Sync detection is done by IC232.

(VS) Sync source VS signal from CN203-14 pin is entered to the IC212-60 pin to comprise VReset/H-PLL. This H phase comparison output (IC212-63 pin) is reflected to the LC type VCO for internal master (in the vicinity of IC208) through LPF at the IC227 periphery. Sync detection is done by IC232.

(MPX-VS) Sync source VS signal separated from the superposed line in the PS-477 board is got from CN203-14 pin.
This signal is processed in the same manner as (VS).

(LL) V pulse (line frequency sync) from CN203-16 pin is entered to the IC212-61 pin. This V pulse and internal VD comprise PLL. This V phase comparison output (IC212-63 pin) is reflected to the LC type VCO for internal master (in the vicinity of IC208) through LPF at the IC227 periphery.

(5) VS servo circuit

This circuit controls the gain (IC201-2 pin) of VS signal (IC201-3 pin) for lens drive via EVR under control of the microcomputer (IC212).

3-3. PS-477 Board

(1) Power supply circuit

Using DC 12 V from the power input terminal or DC voltage (28 V typ) separated from the superposed line, the DC-DC converter and series regulator (IC804) generate 3.3 V, 5 V, 9 V, 15 V, and –9 V.

(2) Superposed circuit

In this circuit, the camera video (IC602 pin 1) is superposed with the superposed line (CN801 pin 10) and also a low pass filter is composed so as to take DC voltage and to supply it to the power circuit.
Then, the external sync. pulse is separated at a differential operation circuit.
The selector (IC 802) switches the superposed sync. signal and VBS/VS signal.

3-4. FC-75 Board

(1) Auto iris DC servo circuit

IC401 controls the lens drive signal according to the illuminance of the subject. SW401 switches VS servo and DC servo.

(2) Various function select switches

DIP switch (SW405), rotary switches (SW403, 404), slide switch (SW401), and tactile switch (SW402) are arranged.

3-5. IR-29 Board

A noise filter and auto iris lens connector are arranged on this board.

3-6. CT-194 Board

Input/output pins, control switches, and variable resistors for adjustment are arranged on this board.

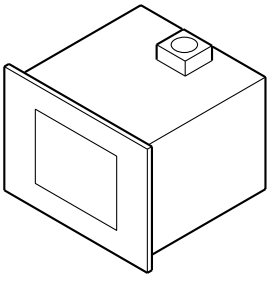
Section 4
Electrical Alignment

4-1. Preparations

4-1-1. Equipment Required

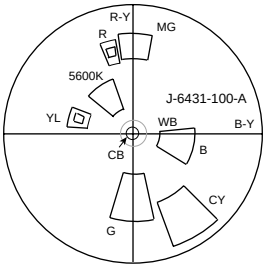
J-6029-140-B	Pattern Box PTB-500

• Light source for test chart



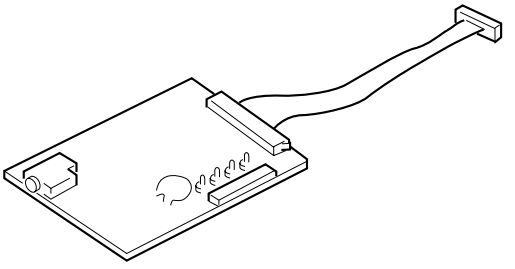
J-6431-100-A	Vectorscope Scale

• For color adjustment



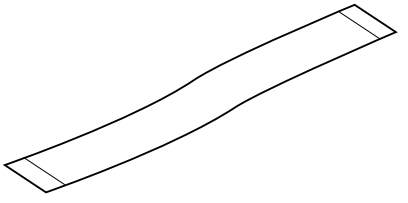
Copy the last page on a transparent sheet.

J-6430-530-A	Board for Interface Tool



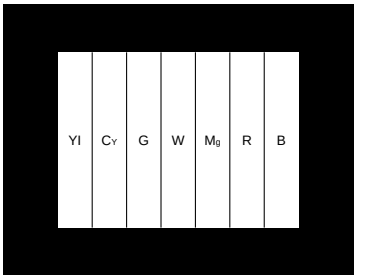
J-6431-170-A	Extension Flex Cable

• For the extension between FC board and PR board



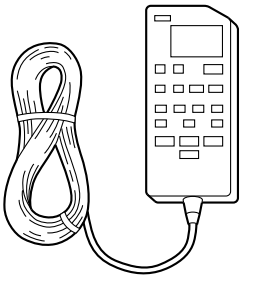
J-6020-250-A	Color Bar Chart

• For color adjustment



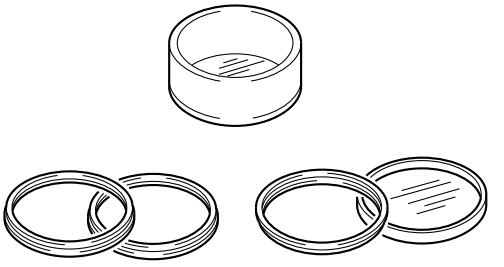
J-6082-053-B	Remote Commander, RM-95

• RM-95 partly converted



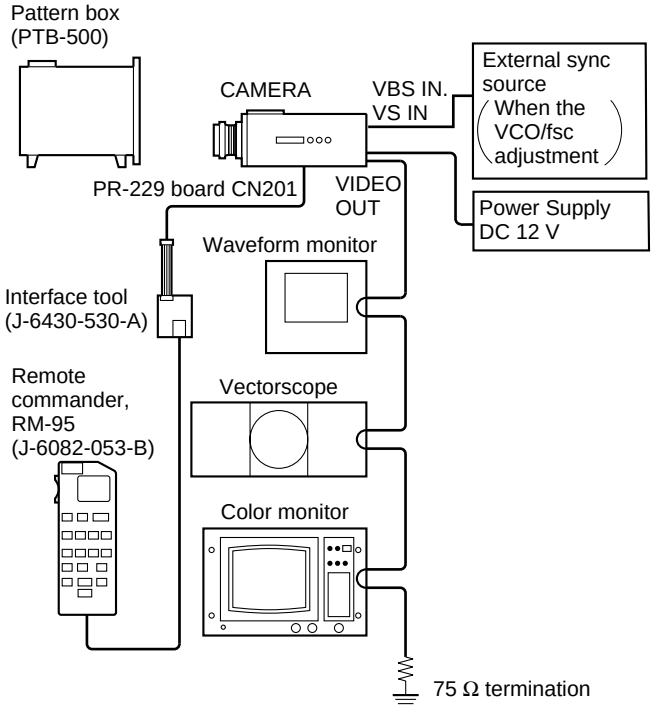
J-6080-053-A	Color Temperature Correction Filter C14

• For the confirmation after the adjustment

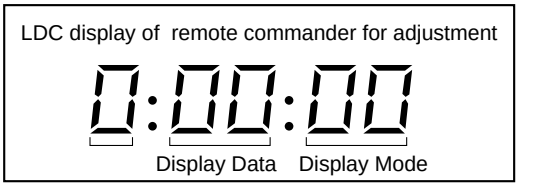


- ND Filter
  ND25 (25 %) 50 by 50 mm square
- Make the transmission factor to 6.25 % with double ND filter.
- Oscilloscope
- Frequency Counter
- Digital Voltmeter
- Vectorscope
- Waveform Monitor
- Color Monitor

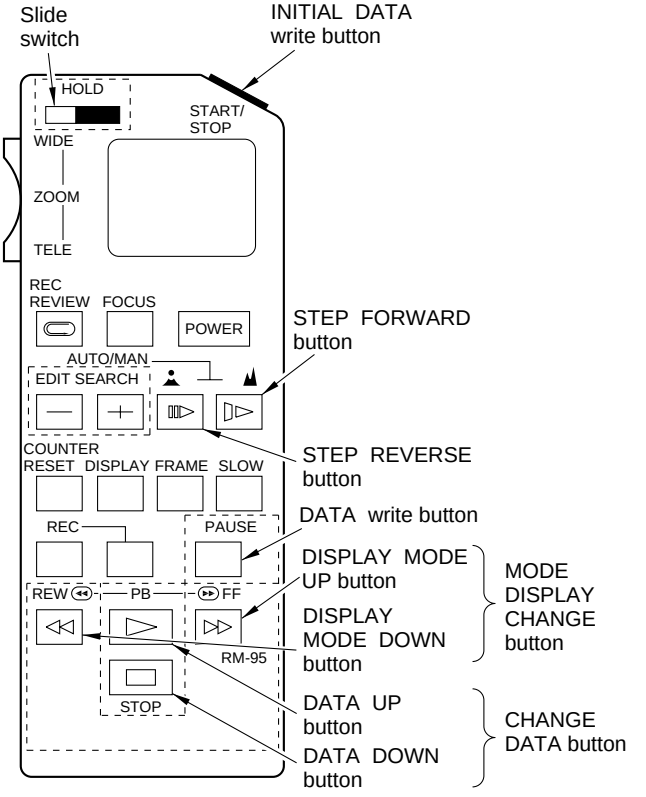
4-1-2. Connection for Adjustment



4-1-3. Adjustment Commander



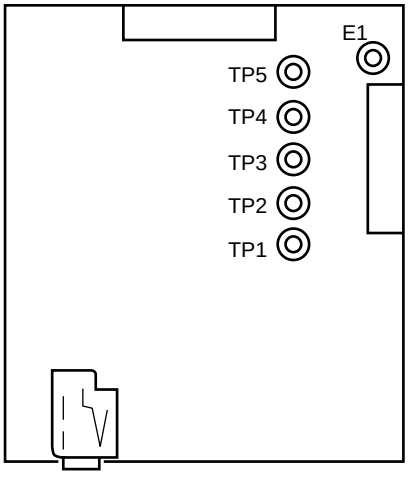
Remote commander,
RM-95 (J-6082-053-B)



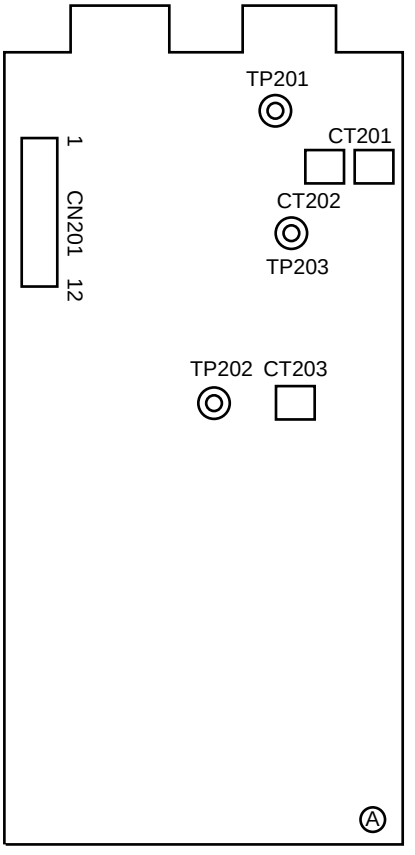
4-1-4. Terminals to Determine Signals for Adjustment

The signals required for adjustment are available at the test pins on the Board for Interface Tool.

TP1: CCD LEVEL
TP2: A/D IN
TP3: V SUB
TP4: V PG
TP5: IRIS OUT
E1 : GND

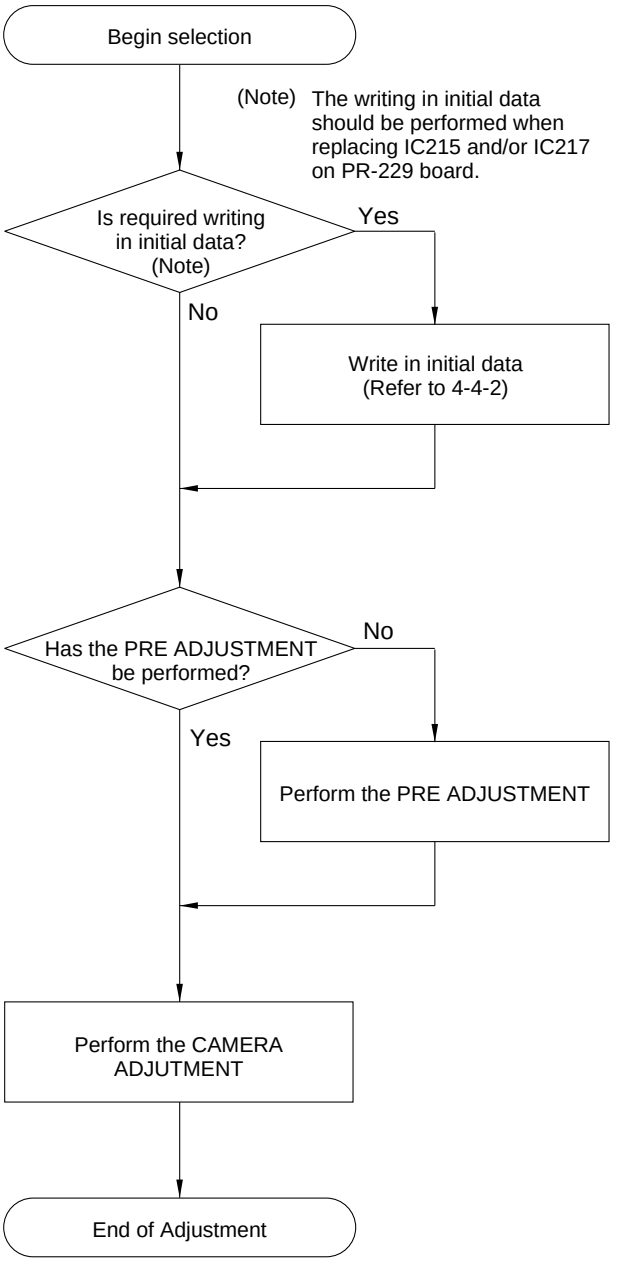


– Board for Interface Tool –



– PR-229 Board –

4-1-5. Chart to Select Items Requiring Adjustment

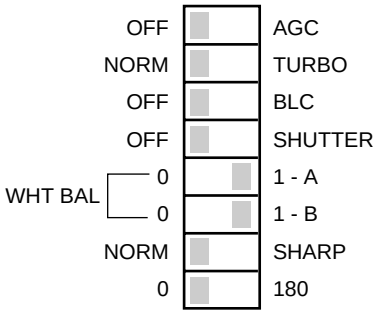


4-2. Adjustment Method

4-2-1. Preparations for Adjustment

(1) Setting switches:

- Set the Mode switch on the rear panel of the camera to B position.
- Set the DIP switches on the side panel of the camera to shown as below.



- Slide the sliding switch (HOLD) in the upper part of the commander to the right side.

(2) Turn on the camera.

(3) Connecting the Commander:

Use a interface tool to connect the commander to the connector (CN201) on the PR-229 board so that the interface tool will have Pin 1 (white) coincide with Pin 1 (on the front panel side) of the connector.

4-2-2. Writing in Initial Data

(1) Press the START/STOP button in the upper part of the commander.

(2) The numerals indicated on the LCD of the commander will go out for a few seconds and then will reappear.

∗ In this stage, if the commander's LCD display remains out and cannot be restored, there is an abnormality somewhere in the circuitry. Do not proceed to adjustment without correcting the abnormality.

<u>If writing in initial data has been performed, be sure to confirming data as follows.</u>

(3) Press the MODE DISPLAY CHANGE button on the commander to display Mode "5F". Subsequently, press the CHANGE DATA button to display Data "01".

(4) Press the DATA write button of the commander.

(5) The numerals indicated on the LCD of the commander will go out for a few seconds and then will reappear.

4-3. PRE ADJUSTMENT

4-3-1. 28MHz Adjustment

Subject	Free
Measurement point	PR Board TP201
Equipment	Frequency Counter
Adjustment point	PR Board CT201
Adjustment value	28.636363 MHz ±80 Hz
Adjustment procedures	Operate an internal SYNC mode.

4-3-2. VCO Adjustment

Subject	Unnecessary
Measurement point	Oscilloscope (DC 500 mV, 0.2 µS)
Equipment	PR Board TP203
Adjustment point	PR Board CT202
Adjustment value	1.7 ±0.1 V
Adjustment procedures	Input the external sync signal to the VS IN connector.

4-3-3. fsc Adjustment

Subject	Free
Measurement point	PR Board TP202
Equipment	Frequency Counter
Adjustment point	PR Board CT203
Adjustment value	3.579545 MHz ±20 Hz
Adjustment procedures	Input the external SYNC signal without Burst signal to VS IN connector

4-4. Camera Adjustment

4-4-1. Setting up the Prepare for Adjustment Mode

① Press the MODE DISPLAY CHANGE button on the commander to display Mode "5F". Subsequently, press the CHANGE DATA button to display Data "01".

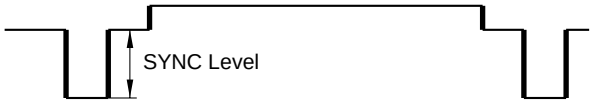
② Press the MODE DISPLAY CHANGE button on the commander to display Mode "61". Subsequently, press the CHANGE DATA button to display Data "01".

Subject	Unnecessary
Measurement point	Nothing

4-4-2. SYNC Level Adjustment

① Press the STEP FORWARD button on the commander three times. As a result, the displayed mode will change to “2B”.
② Close the lens opening.
③ Press the CHANGE DATA button so that the determined voltage will fall within the standard range.

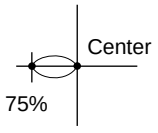
Subject	Free
Measurement point	SYNC level of VIDEO OUT
Equipment	Waveform Monitor
Display Mode	2B
Specification	40 ±4 IRE
Lens opening	Close



4-4-3. Burst Level Adjustment

① Press the STEP FORWARD button on the commander once. As a result, the displayed mode will change to “2C”.
② Press the CHANGE DATA button so that the burst level will be 75 %.

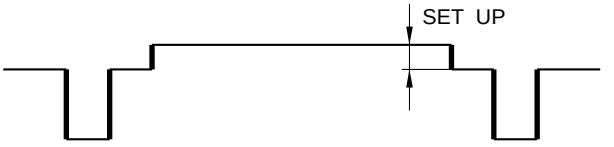
Subject	Free
Equipment	Vectorscope
Display Mode	2C
Specification	Burst level is 75 %



4-4-4. SET UP Adjustment

① Press the step forward button of the commander once. The mode indicator will display “00”.
② Press the data change button to ensure the measured voltage is within the specified value range.

Subject	Close ‘C’
Measurement point	SET UP level of VIDEO OUT
Equipment	Waveform Monitor
Display Mode	00
Specification	7.0 ±2.0 IRE



4-4-5. 0 dB Adjustment

① Press the STEP FORWARD button on the commander once. As a result, the displayed mode will change to “5A”.
② Shoot the all-white pattern, and adjust the lens iris so that the CCD LEVEL (TP1) is 250 ±20 mV p-p.

Subject	All white pattern
Measurement point	Interface Tool TP1 (CCD LEVEL)
Equipment	Oscilloscope (AC 50 mV, 10 µs)
Display Mode	5A
Specification	250 ±20 mV

③ Press the data change button to ensure the measured voltage is within the specified value range.

Subject	All white pattern
Measurement point	Interface Tool TP2 (A/D-IN)
Equipment	Oscilloscope (AC 200 mV, 10 µs)
Display Mode	5A
Specification	800 $^{+60}_{-40}$mV

4-4-6. Auto-Iris VS Level Adjustment

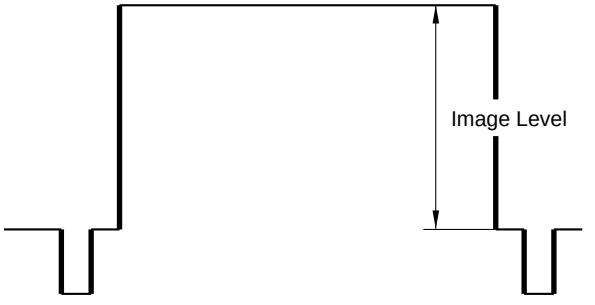
① Press the step forward button of the commander once. The mode indicator will display “2D”.
② Keep the lens iris at 4-4-5 ②.
③ Press the data change button to ensure that the measured voltage is within the specified value range.

Subject	All white pattern
Measurement point	Interface Tool TP5 (IRIS OUT)
Equipment	Oscilloscope (AC 100 mV, 10 µs)
Display Mode	2D
Specification	700 ±40 mV

4-4-7. AGC MAX Adjustment

① Press the step forward button of the commander once. The mode indicator will display “5C”.
② Install the ND filter (6.25 %).
∗ Keep the lens iris at 4-4-6 .
③ Press the data change button to ensure that the measured voltage is within the specified value range.

Subject	All white pattern
Measurement point	VIDEO OUT image level
Equipment	Waveform Monitor
Display Mode	5C
Specification	65 ±3 IRE



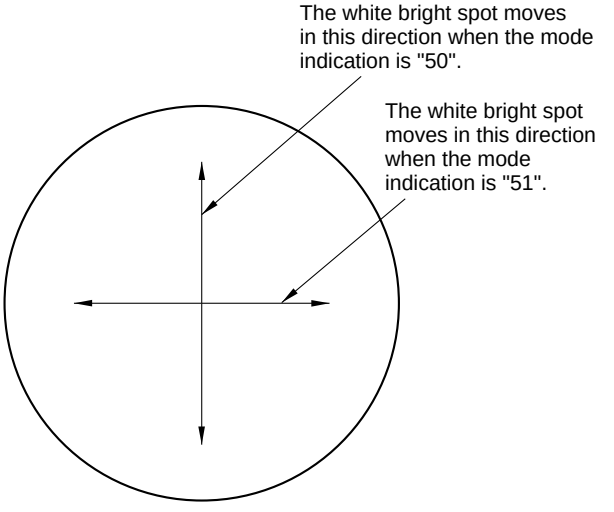
4-4-8. WB (3200K preset) Adjustment

① Press the step forward button of the commander once. The mode indicator will display “50”.
② Remove the ND filter. Adjust the lens iris so that the VIDEO-OUT image level is set at 65 ±3 IRE.

Subject	All white pattern
Measurement point	Image level of VIDEO OUT
Equipment	Waveform Monitor
Display Mode	50
Specification	65 ±3 IRE

③ Alternately switch the mode between “50” and “51” by pressing the MODE DISPLAY CHANGE button, and while doing so, press the data change button so that the white bright spot is placed over the origin of the vectorscope.

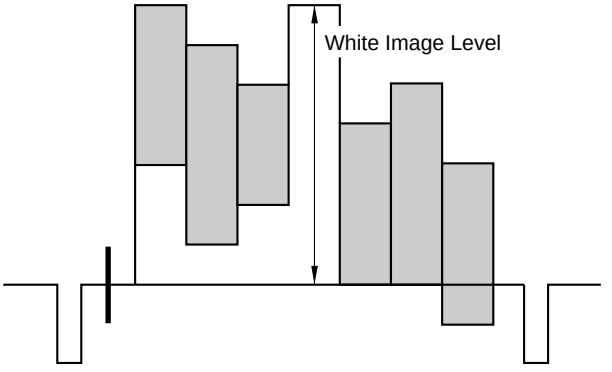
Subject	All white pattern
Measurement point	VIDEO OUT white bright spot
Equipment	Vectorscope
Display Mode	50, 51
Specification	The white bright spot is placed over the origin of the vectorscope.



4-4-9. Color Reproduction

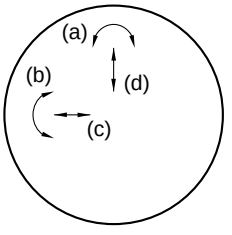
① Press the step forward button once. The mode indicator will display “03”.
② Shoot the color bar chart.
③ Adjust the lens iris so that the VIDEO-OUT white image level is set to 90 ±2.5 IRE.

Subject	Color Bar Chart
Measurement point	White image level of VIDEO OUT
Equipment	Waveform Monitor
Display Mode	03
Specification	90 ±2.5 IRE



④ Switching the mode between “03”, “04”, “05” and “06” by pressing the MODE DISPLAY CHANGE button and while doing so, press the data change button so that the center of the bright spot for each color is placed in it’s respective reproduction range.

Subject	Color Bar Chart
Measurement point	Respective color bright spot of VIDEO OUT
Equipment	Waveform Monitor
Display Mode	03, 04, 05, 06
Specification	The center of the bright spot for each color is in it’s respective reproduction range



(a) Moving direction of the bright spot when mode is “03”
(b) Moving direction of the bright spot when mode is “04”
(c) Moving direction of the bright spot when mode is “05”
(d) Moving direction of the bright spot when mode is “06”

4-4-10. WB Data Take-in

① Press the commander’s step forward button once. The mode indicator will display “63” and the data indicator will displays “02”.
② Shoot the all-white pattern.
③ Adjust the lens iris so that the image level of the VIDEO-OUT value is set to 65 ±3 IRE.

Subject	All white pattern
Measurement point	White image level of VIDEO OUT
Equipment	Waveform Monitor
Display Mode	63
Specification	65 ±3 IRE

④ Press the data up button of the commander so that the data indicator displays “03”.
⑤ Make sure that the data indicator of the commander automatically displays “FF”.

∗ If the data indicator does not display “FF”, there may be a defective part in the circuit. Repair it, then repeat these steps.

4-4-11. Data Write

① Press the step forward button of the commander once. The LCD indicator will turn off for a few seconds, then turn on. Make sure that the data indicator displays “00”. (The mode indicator should still display “63”.)

∗ If the LCD indicator turns off and does not turns on, or the data indicator does not display “00”, there may be a defective part in the circuit. Repair it, then repeat these steps.

Note: In this time, do not press the DATA write (PAUSE) button.

4-5. Checking after Adjustment

To check the values after adjustment, remove the commander and the commander junction fixture from the camera. Turn off the camera, then turn it on again before checking.

4-5-1. Checking SYNC Level Adjustment

Check to see if the measured voltage is within the specified range.

Subject	Free
Measurement point	SYNC level of VIDEO OUT
Equipment	Waveform Monitor
Specification	40 ±4 IRE
Lens iris	Close

4-5-2. Checking Burst Level Adjustment

Check to see if the measured voltage is within the specified range.

Subject	Free
Equipment	Vector scope
Specification	Burst level is 75 %

4-5-3. Checking SET UP Adjustment

① Turn OFF the AGC switch on the side panel of the camera.
② Check to see if the measured voltage is within the specified value range.

Subject	Free
Measurement point	SET UP level of VIDEO OUT
Equipment	Waveform Monitor
Specification	7.0 ±2.0 IRE
Lens iris	Close

4-5-4. Checking 0 db Adjustment

① Turn OFF the AGC and CCD-IRIS switches on the side panel of the camera.
② Shoot the all-white pattern and adjust the lens iris so that the CCD LEVEL is the specified value.

Subject	All white pattern
Measurement point	PR Board CN201 ① pin (CCD LEVEL)
Equipment	Oscilloscope (AC 50 mV, 10 µs)
Specification	250 ±20 mV

③ Check to see if the AD/-IN value (CN302 ② pin) is within the specified value range.

Subject	All white pattern
Measurement point	PR Board CN201 ② pin (A/D-IN)
Equipment	Oscilloscope (AC 200 mV, 10 µs)
Specification	$800\ ^{+60}_{-40}$ mV

∗ If there is a point where specified value for step ③ is satisfied while varying the iris within the specified value range for step ②, the adjustment is correct.

4-5-5. Checking Auto Iris VS Level

① (Same as 4-5-4 ①.)
② (Same as 4-5-4 ②.)
③ Check to see if the measured voltage is within the Specified range.

Subject	All white pattern
Measurement point	PR Board CN201 ⑥ pin (IRIS OUT)
Equipment	Oscilloscope (AC 200 mV, 10 µs)
Specification	700 ±40 mV

∗ If there is a point where the specified value for step ③ is satisfied while varying the lens iris within the specified value range for step ②, the adjustment is correct.

4-5-6. Checking AGC Adjustment

① Turn OFF the AGC and CCD-IRIS switches on the side panel of the camera.
② Shoot the all-white pattern and adjust the lens iris so that the VIDEO-OUT image level is the specified value.

Subject	All white pattern
Measurement point	Image level of VIDEO OUT
Equipment	Waveform Monitor
Specification	100 ±2 IRE

③ Set the ND filter (transmission factor: 6.25 %).
④ Turn ON the AGC switch on the side panel of the camera, and turn NORM the TURBO/NORM switch
⑤ Shoot the all-white pattern. Check to see if the VIDEO-OUT image level is within the specified value range.

Subject	All white pattern
Measurement point	Image level of VIDEO OUT
Equipment	Waveform Monitor
Specification	65 ±5 IRE

∗ If there is a point where the specified value for step ⑤ is satisfied while varying the lens iris within the specified value range for step ②, the adjustment is correct.
Or, if there is a point where the specified value for step ⑤ is satisfied while varying the VIDEO LEVEL on the side panel, the adjustment is correct.

4-5-7. Checking WB adjustment (3200K preset and data take-in)

Checking ATW operation

① Set the WB switch on the camera side panel to the ATW-PRO position, and turn OFF the AGC and CCD-IRIS Switches.
② Set the C14 filter.
③ Shoot the all-white pattern. Adjust the iris diaphragm so that the VIDEO-OUT image level is set within the specified value range.

Subject	All white pattern
Measurement point	Image level of VIDEO OUT
Equipment	Waveform Monitor
Specification	65 ±3 IRE

④ Check to see if the white bright spot on the vectorscope converges to meet the specified value.

Subject		All white pattern
Measurement point		White bright spot of VIDEO OUT
Equipment		Vectorscope
Specification	**Convergence time**	Within 30 seconds
	Convergence spot	Within a radius of 15 % of the vectorscope's diameter of the origin (Suppose the vectorscope's diameter is 100 %.)

⑤ Remove the C14 filter and perform step 3 and step 4.

4-5-8. Checking Color Reproduction Adjustment

① Turn OFF the AGC and CCD-IRIS switches on the side panel of the camera.
② Shoot the color bar chart.
③ Adjust the iris diaphragm so that the VIDEO-OUT white image level is set within the specified value range.

Subject	Color Bar Chart
Measurement point	White image level VIDEO OUT
Equipment	Waveform Monitor
Specification	90 ±2.5 IRE

④ Check to see if the center of the bright spot of each of the colors is within the color reproduction range.

Subject	Color Bar Chart
Measurement point	Respective color bright spot of VIDEO OUT
Equipment	Vector scope
Specification	The center of the bright spot for each color is in it's respective reproduction range.

∗ If there is a point where the specified value for step ④ is satisfied while varying the lens iris within the specified value range for step ③, the adjustment is correct.

Section 5
Spare Parts

5-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

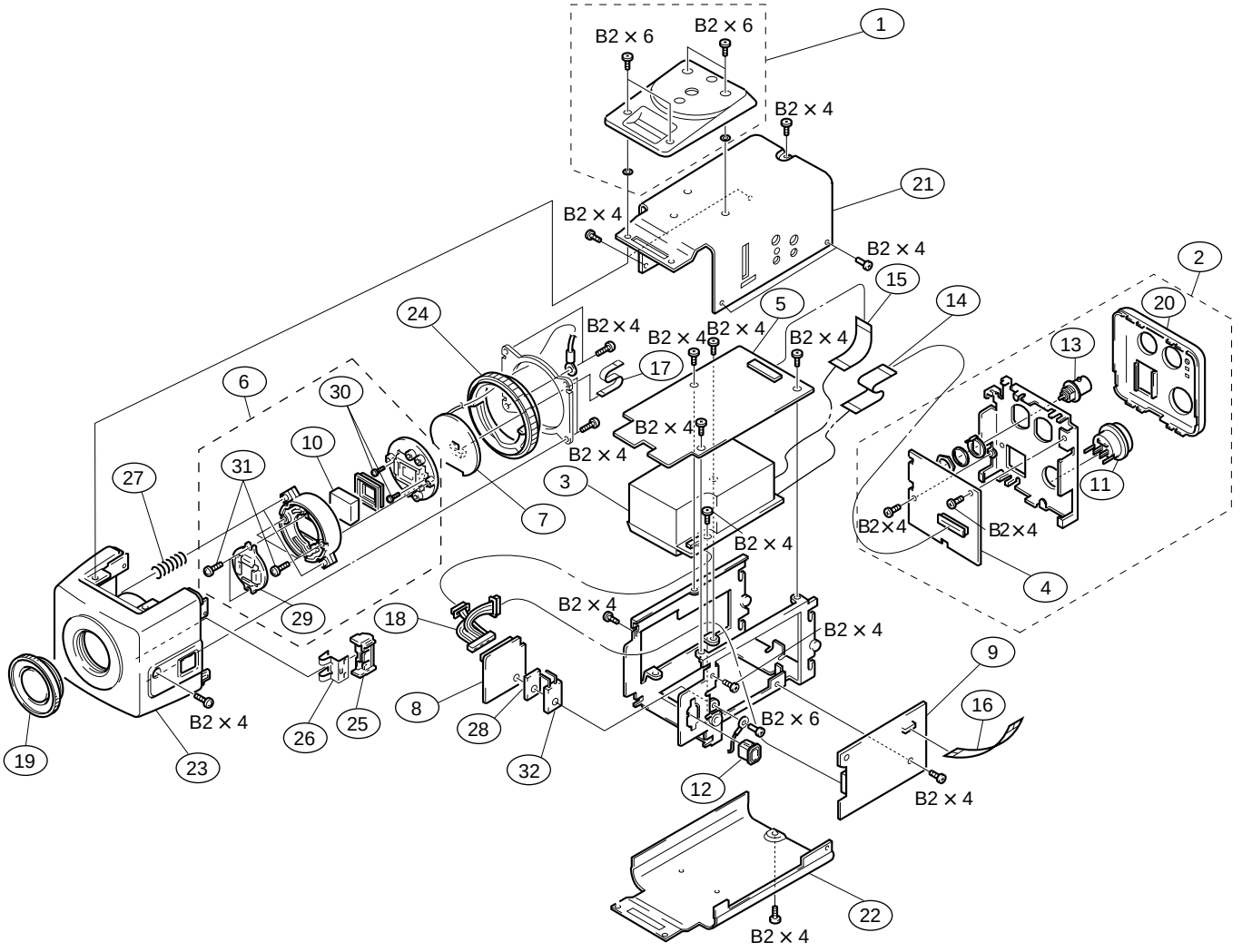
3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.
In need of repair, get components shown in the list and repair using them.

5-2. Exploded View



No.	Part No.	SP	Description
1	A-8310-252-A	o	ADAPTOR ASSY, TRI
2	A-8315-274-A	o	REAR BLOCK ASSY
3	A-8315-318-A	s	MOUNTED CIRCUIT BOARD, PS-477
4	A-8315-322-A	o	MOUNTED CIRCUIT BOARD, CT-194
5	A-8320-245-A	o	MOUNTED CIRCUIT BOARD, PR-229ND
6	A-8279-066-A	o	FILTER BLOCK ASSY
7	A-8320-259-A	o	MOUNTED CIRCUIT BOARD, BI-135
8	A-8320-260-A	o	MOUNTED CIRCUIT BOARD, IR-29
9	A-8320-261-A	o	MOUNTED CIRCUIT BOARD, FC-75
10	1-547-381-12	s	FILTER BLOCK, OPTICAL
11	1-566-850-11	s	CONNECTOR, (S) TERMINAL 4P
12	1-580-172-11	s	CONNECTOR, MICRO (RECEPTACLE) 4P
13	1-793-002-11	s	CONNECTOR, BNC
14	1-766-287-11	s	WIRE, FLEXIBLE CARD
15	1-769-275-11	s	WIRE, FLEXIBLE CARD
16	1-782-538-11	s	CABLE, FLEXIBLE FLAT (28 CORE)
17	1-790-157-11	o	CABLE, FLEXIBLE FLAT (14 CORE)
18	1-957-799-11	o	HARNESS (CONNECTOR CB1)
19	2-042-385-00	s	CAP, C MOUNT
20	3-608-575-12	o	PANEL (DC), REAR
21	3-608-576-31	o	CASE, UPPER
22	3-608-577-11	o	CASE, LOWER
23	3-679-547-01	o	PANEL,FRONT
24	3-679-549-11	o	RING, ADJUST
25	3-679-555-11	o	LOCKBASE, RING
26	3-679-561-01	o	SPRING, LOCK BASE
27	3-679-565-01	o	SPRING, COMPRESSION
28	4-386-536-01	s	SHEET, SILICON
29	4-393-836-01	o	BRACKET (COL), FILTER
30	7-627-551-28	s	SCREW, PRECISION +P 1.4X2.5
31	7-627-853-88	s	PRECISION SCREW +P 2X8 TYPE 3
32	8-729-306-92	s	TRANSISTOR 2SD669A-C
	7-621-772-10	s	SCREW +B 2X4
	7-621-772-30	s	SCREW +B 2X6

5-3. Electrical Parts List

BI-135 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8320-259-A	o	MOUNTED CIRCUIT BOARD, BI-135
C101	1-107-690-11	s	TANTALUM, CHIP 6.8uF 20% 35V
C103	1-135-147-11	s	TANTALUM, CHIP 1uF 20% 20V
C104	1-104-752-11	s	TANTALUM, CHIP 33uF 20% 6.3V
C105	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C106	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 25V
CN101	1-764-523-11	o	CONNECTOR, FFC/FPC (ZIF) 14P, FEMAL
L101	1-412-030-11	s	INDUCTOR CHIP 22uH
Q101	8-729-232-87	s	TRANSISTOR 2SK1875
Q102	8-729-230-60	s	TRANSISTOR 2SA1586YG
R101	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R102	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R103	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R104	1-218-881-11	s	METAL, CHIP 27K 0.50% 1/16W
R105	1-216-848-11	s	METAL, CHIP 180K 5% 1/16W
R106	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W

CT-194 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8315-322-A	o	MOUNTED CIRCUIT BOARD, CT-194
CN501	1-691-503-11	o	CONNECTOR, FPC 14P, MALE
CN503	1-537-315-11	s	TERMINAL BOARD
D501	8-719-057-24	s	DIODE SLR342MG
D502	8-719-109-89	s	DIODE RD5.6ES-B2
D503	8-719-109-89	s	DIODE RD5.6ES-B2
D504	8-719-110-83	s	DIODE RD36E-B2
D505	8-719-110-83	s	DIODE RD36E-B2
D506	8-719-109-89	s	DIODE RD5.6ES-B2
D507	8-719-109-89	s	DIODE RD5.6ES-B2
D508	8-719-109-89	s	DIODE RD5.6ES-B2
D509	8-719-109-89	s	DIODE RD5.6ES-B2
F501	⚠ 1-532-775-51	s	FUSE, MICRO (SECONDARY)
FL501	1-236-071-11	s	ENCAPSULATED COMPONENT
R501	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R503	1-215-394-00	s	METAL 75 1% 1/6W
SW501	1-572-529-11	s	SWITCH, SLIDE
SW502	1-572-528-11	s	SWITCH, SLIDE

FC-75 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8320-261-A	o	MOUNTED CIRCUIT BOARD, FC-75
C401	1-113-981-11	s	TANTALUM 22uF 20% 20V
C402	1-107-826-11	s	CERAMIC, CHIP 0.1uF 10% 16V
C403	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C404	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C405	1-104-913-11	s	TANTALUM, CHIP 10uF 20% 16V
C406	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C407	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C408	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C409	1-104-914-11	s	TANTALUM 22uF 20% 16V
C410	1-163-021-91	s	CERAMIC 0.01uF 10% 50V
C411	1-163-021-91	s	CERAMIC 0.01uF 10% 50V
C412	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
CN401	1-573-768-21	o	CONNECTOR (1.5MM)(SMD) 5P MALE
CN402	1-573-368-11	s	CONNECTOR, FFC/FPC 28P, FEMALE
IC401	8-759-545-66	s	IC NJM3414AMP(TE2)
L401	1-412-030-11	s	INDUCTOR CHIP 22uH
L402	1-414-656-11	s	INDUCTOR 0uH
L403	1-414-656-11	s	INDUCTOR 0uH
L404	1-414-656-11	s	INDUCTOR 0uH
L405	1-414-656-11	s	INDUCTOR 0uH
L406	1-414-656-11	s	INDUCTOR 0uH
L407	1-412-030-11	s	INDUCTOR CHIP 22uH
Q401	8-729-427-74	s	TRANSISTOR XP4601
R401	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R402	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R403	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R404	1-216-847-11	s	METAL, CHIP 150K 5% 1/16W
R405	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R406	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R407	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R408	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R409	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R410	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R411	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R412	1-216-847-11	s	METAL, CHIP 150K 5% 1/16W
R413	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R414	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R415	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R416	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R417	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R418	1-218-871-11	s	RES, CHIP 10K 0.5% 1/16W
R419	1-218-871-11	s	RES, CHIP 10K 0.5% 1/16W
R420	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R421	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R422	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R423	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R424	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R425	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R426	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R427	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R428	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
RV401	1-237-038-11	s	RES, ADJ, METAL 50K
RV402	1-237-038-11	s	RES, ADJ, METAL 50K

(FC-75 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
SW401	1-771-140-11	s	SWITCH, SLIDE
SW402	1-571-188-21	s	SWITCH, TACTIL (REFLOW TYPE)
SW403	1-692-066-11	s	SWITCH, ROTARY
SW404	1-692-066-11	s	SWITCH, ROTARY
SW405	1-570-623-11	s	SWITCH, DIP 8-CKT

IR-29 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8320-260-A	o	MOUNTED CIRCUIT BOARD, IR-29
L701	1-412-027-11	s	INDUCTOR CHIP 2.2uH
L702	1-414-656-11	s	INDUCTOR 0uH
L703	1-414-656-11	s	INDUCTOR 0uH
L704	1-414-656-11	s	INDUCTOR 0uH
L705	1-414-656-11	s	INDUCTOR 0uH
L706	1-414-760-21	s	FERRITE 0uH
L707	1-414-760-21	s	FERRITE 0uH
L708	1-414-760-21	s	FERRITE 0uH
L709	1-414-760-21	s	FERRITE 0uH

PR-229ND BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8320-245-A	o	MOUNTED CIRCUIT BOARD, PR-229ND
C201	1-107-689-11	s	TANTALUM, CHIP 1uF 20% 35V
C202	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C203	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 25V
C204	1-135-177-21	s	TANTALUM, CHIP 1uF 10% 25V
C205	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C206	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C207	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C209	1-162-926-11	s	CERAMIC, CHIP 82PF 5% 50V
C210	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C212	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C213	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C214	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C215	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C216	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C217	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C218	1-135-212-21	s	TANTALUM, CHIP 2.2uF 10% 35V
C219	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C220	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C221	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C222	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C223	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C224	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C225	1-162-911-11	s	CERAMIC, CHIP 6PF 50V
C226	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
C227	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C228	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C229	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C230	1-104-478-11	s	TANTAL 10uF 20% 35V
C231	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C232	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C233	1-115-467-11	s	CERAMIC 0.22uF 10% 10V
C234	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C235	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C236	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C237	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C238	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C240	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C241	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C242	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C243	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C244	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C246	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C247	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C248	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C249	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C250	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C251	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C252	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C253	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C254	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C255	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C256	1-162-916-11	s	CERAMIC, CHIP 12PF 5% 50V
C257	1-162-908-11	s	CERAMIC, CHIP 3PF 0.25PF 50V
C258	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C259	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C260	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C261	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V

(PR-229ND BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C262	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C263	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C264	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C265	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C266	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C267	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C268	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C269	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C270	1-110-569-11	s	TANTAL 47uF 20% 6.3
C271	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C272	1-107-690-11	s	TANTALUM, CHIP 6.8uF 20% 35V
C273	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C274	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C275	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C276	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C277	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C278	1-104-850-11	s	TANTAL 6.8uF 20% 10V
C279	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C280	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C281	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C282	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C283	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C284	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C285	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C286	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C287	1-162-911-11	s	CERAMIC, CHIP 6PF 50V
C288	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C289	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C290	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C291	1-162-911-11	s	CERAMIC, CHIP 6PF 50V
C292	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C293	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C294	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C295	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C296	1-104-850-11	s	TANTAL 6.8uF 20% 10V
C297	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C298	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C299	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C300	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C301	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C302	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C303	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C304	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C305	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C306	1-162-918-11	s	CERAMIC, CHIP 18PF 5% 50V
C307	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C308	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C309	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C310	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C311	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C312	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C313	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C314	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C315	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C316	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C317	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C318	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C319	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C320	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V

(PR-229ND BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C321	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C322	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C323	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C324	1-135-091-00	s	TANTALUM, CHIP 1uF 20% 16V
C325	1-164-315-11	s	CERAMIC 470PF 5% 50V
C326	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C328	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C329	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C330	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C331	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C332	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C334	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C336	1-135-091-00	s	TANTALUM, CHIP 1uF 20% 16V
C337	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C339	1-162-915-11	s	CERAMIC, CHIP 10PF 0.5PF 50V
C340	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C341	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C342	1-111-253-11	s	TANTAL 100uF 20% 6.3
C343	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C344	1-110-569-11	s	TANTAL 47uF 20% 6.3
C345	1-115-467-11	s	CERAMIC 0.22uF 10% 10V
C346	1-135-091-00	s	TANTALUM, CHIP 1uF 20% 16V
C347	1-162-915-11	s	CERAMIC, CHIP 10PF 0.5PF 50V
C348	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C349	1-111-253-11	s	TANTAL 100uF 20% 6.3
C351	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C352	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C354	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C355	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C356	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C357	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C358	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C359	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C360	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C361	1-128-403-11	s	ELECT 47uF 20% 35V
C363	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C364	1-115-467-11	s	CERAMIC 0.22uF 10% 10V
C365	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C366	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C367	1-135-091-00	s	TANTALUM, CHIP 1uF 20% 16V
C368	1-162-915-11	s	CERAMIC, CHIP 10PF 0.5PF 50V
C369	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C370	1-111-253-11	s	TANTAL 100uF 20% 6.3
C371	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C372	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C373	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C374	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C375	1-126-392-11	s	ELECT, CHIP 100uF 20% 6.3V
C376	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C377	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C378	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C379	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C380	1-164-218-11	s	CERAMIC 180PF 5% 50V
C381	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C382	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C383	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C384	1-162-964-11	s	CERAMIC, CHIP 0.001uF 10% 50V
C385	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C386	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V

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Ref. No. or Q'ty	Part No.	SP	Description
C387	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C388	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C389	1-164-218-11	s	CERAMIC 180PF 5% 50V
C390	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C391	1-164-380-11	s	CERAMIC 51PF 5% 50V
C392	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C393	1-164-315-11	s	CERAMIC 470PF 5% 50V
C394	1-115-412-11	s	CERAMIC 680pF 5% 25V
C395	1-104-851-11	s	TANTALUM, CHIP 10uF 20% 10V
C396	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C397	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C398	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C399	1-135-259-11	s	TANTALUM, CHIP 10uF 20% 6.3V
C401	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C402	1-164-156-11	s	CERAMIC, CHIP 0.1uF 25V
C403	1-110-569-11	s	TANTAL 47uF 20% 6.3
CN201	1-764-007-11	o	PIN, CONNECTOR (SMD) 12P
CN202	1-573-354-11	s	CONNECTOR, FFC/FPC 14P, FEMALE
CN203	1-695-930-21	o	CONNECTOR, FPC 16P, FEMALE
CN204	1-764-534-21	s	CONNECTOR, FFC/FPC (ZIF) 28P, FEMAL
CT201	1-141-373-11	s	CAP, CHIP TRIMMER
CT202	1-141-368-11	s	CAP, CHIP TRIMMER
CT203	1-141-373-11	s	CAP, CHIP TRIMMER
D202	8-719-404-49	s	DIODE MA111
D204	8-719-404-49	s	DIODE MA111
D205	8-719-404-49	s	DIODE MA111
D206	8-719-404-49	s	DIODE MA111
D207	8-719-031-68	s	DIODE HVU359TRF
D208	8-719-404-49	s	DIODE MA111
D209	8-719-988-37	s	DIODE HVU350F
D210	8-719-031-68	s	DIODE HVU359TRF
D211	8-719-058-24	s	DIODE RB501V-40TE-17
D212	8-719-404-49	s	DIODE MA111
D213	8-719-404-49	s	DIODE MA111
FL201	1-233-668-21	s	FILTER, BANDPASS
FL202	1-239-352-11	s	FILTER, LOW-PASS
IC201	8-759-196-69	s	IC BA7655AF-E2
IC202	8-759-196-93	s	IC TC7SH00FU-TE85R
IC203	8-752-073-11	s	IC CXA2006Q-T4
IC204	8-759-271-88	s	IC TC7SHU04FU-TE85R
IC205	8-759-196-93	s	IC TC7SH00FU-TE85R
IC206	8-752-388-60	s	IC CXD2480R-T4
IC208	8-759-271-88	s	IC TC7SHU04FU-TE85R
IC209	8-759-335-30	s	IC HD49315AFEB
IC210	8-759-064-36	s	IC MB88346BPFV
IC211	8-759-510-71	s	IC BA10358F-E2
IC212	8-752-397-20	s	IC CXD2163BR-T6
IC213	8-759-271-86	s	IC TC7SH04FU-TE85R
IC214	8-759-542-98	s	IC S-80827ALUP-EAQ-T2
IC215	8-759-464-95	s	IC AK6420AF-E2
IC216	8-759-523-97	s	IC TC74VHC123AFT(EL)
IC217	8-752-914-09	s	IC CXP87132-089R
IC218	8-759-058-54	s	IC TC7S00FU(TE85R)
IC219	8-759-443-02	s	IC TC75W51FU-TE12R
IC220	8-759-523-02	s	IC TC74HC4053AFT(EL)
IC221	8-759-058-54	s	IC TC7S00FU(TE85R)

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Ref. No. or Q'ty	Part No.	SP	Description
IC222	8-759-058-54	s	IC TC7S00FU(TE85R)
IC223	8-759-523-78	s	IC TC74VHC00FT(EL)
IC225	8-759-262-03	s	IC MC14577CF
IC226	8-759-262-03	s	IC MC14577CF
IC227	8-759-271-88	s	IC TC7SHU04FU-TE85R
IC229	8-759-058-54	s	IC TC7S00FU(TE85R)
IC230	8-759-277-63	s	IC TC7W14FU(TE12R)
IC231	8-759-523-97	s	IC TC74VHC123AFT(EL)
IC232	8-759-710-12	s	IC NJM2230M
IC233	8-759-271-86	s	IC TC7SH04FU-TE85R
IC234	8-759-066-56	s	IC TA75W393FU
IC235	8-759-523-97	s	IC TC74VHC123AFT(EL)
IC236	8-759-196-93	s	IC TC7SH00FU-TE85R
IC237	8-759-196-93	s	IC TC7SH00FU-TE85R
IC238	8-759-196-93	s	IC TC7SH00FU-TE85R
IC239	8-759-271-88	s	IC TC7SHU04FU-TE85R
L201	1-412-030-11	s	INDUCTOR CHIP 22uH
L202	1-412-030-11	s	INDUCTOR CHIP 22uH
L203	1-412-030-11	s	INDUCTOR CHIP 22uH
L204	1-412-030-11	s	INDUCTOR CHIP 22uH
L205	1-412-030-11	s	INDUCTOR CHIP 22uH
L206	1-412-030-11	s	INDUCTOR CHIP 22uH
L207	1-412-030-11	s	INDUCTOR CHIP 22uH
L208	1-412-030-11	s	INDUCTOR CHIP 22uH
L209	1-410-374-11	s	INDUCTOR CHIP 2.7uH
L210	1-412-030-11	s	INDUCTOR CHIP 22uH
L211	1-412-030-11	s	INDUCTOR CHIP 22uH
L212	1-412-030-11	s	INDUCTOR CHIP 22uH
L213	1-412-030-11	s	INDUCTOR CHIP 22uH
L214	1-412-030-11	s	INDUCTOR CHIP 22uH
L216	1-412-030-11	s	INDUCTOR CHIP 22uH
L217	1-412-032-11	s	INDUCTOR CHIP 100uH
L218	1-412-030-11	s	INDUCTOR CHIP 22uH
L219	1-412-030-11	s	INDUCTOR CHIP 22uH
L220	1-412-030-11	s	INDUCTOR CHIP 22uH
L221	1-412-030-11	s	INDUCTOR CHIP 22uH
L222	1-412-030-11	s	INDUCTOR CHIP 22uH
L223	1-412-030-11	s	INDUCTOR CHIP 22uH
L224	1-412-030-11	s	INDUCTOR CHIP 22uH
L225	1-412-030-11	s	INDUCTOR CHIP 22uH
L226	1-412-030-11	s	INDUCTOR CHIP 22uH
L227	1-412-030-11	s	INDUCTOR CHIP 22uH
L228	1-412-030-11	s	INDUCTOR CHIP 22uH
L229	1-412-027-11	s	INDUCTOR CHIP 2.2uH
L230	1-412-027-11	s	INDUCTOR CHIP 2.2uH
L231	1-412-030-11	s	INDUCTOR CHIP 22uH
L232	1-410-385-11	s	INDUCTOR, CHIP 22uH
Q201	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q202	8-729-907-00	s	TRANSISTOR DTC114EU
Q204	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q205	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q206	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q207	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q209	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q210	8-729-117-73	s	TRANSISTOR 2SC4178-F14
Q211	8-729-117-73	s	TRANSISTOR 2SC4178-F14
Q212	8-729-230-63	s	TRANSISTOR 2SC4116YG

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Ref. No. or Q'ty	Part No.	SP	Description
Q213	8-729-230-63	s	TRANSISTOR 2SC4116YG
Q215	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q216	8-729-117-73	s	TRANSISTOR 2SC4178-F14
Q217	8-729-230-63	s	TRANSISTOR 2SC4116YG
Q219	8-729-427-74	s	TRANSISTOR XP4601
Q220	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q221	8-729-427-70	s	TRANSISTOR XP4401-TXE
Q222	8-729-230-63	s	TRANSISTOR 2SC4116YG
Q223	8-729-230-63	s	TRANSISTOR 2SC4116YG
Q224	8-729-230-63	s	TRANSISTOR 2SC4116YG
Q225	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q226	8-729-230-63	s	TRANSISTOR 2SC4116YG
Q227	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q228	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q229	8-729-907-00	s	TRANSISTOR DTC114EU
R201	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R202	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R203	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R204	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R205	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R206	1-218-856-11	s	METAL, CHIP 2.4K 0.50% 1/16W
R207	1-218-855-11	s	RES, CHIP 2.2K 0.5% 1/16W
R208	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R209	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R210	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R211	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R212	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R213	1-218-876-11	s	RES, CHIP 16K 0.5% 1/16W
R214	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R215	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R216	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R217	1-216-807-11	s	METAL, CHIP 68 5% 1/16W
R219	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R221	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R222	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R223	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R224	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R225	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R226	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R227	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R228	1-218-876-11	s	RES, CHIP 16K 0.5% 1/16W
R229	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R230	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R231	1-218-847-11	s	RES, CHIP 1K 0.5% 1/16W
R232	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R233	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R234	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R235	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R236	1-218-881-11	s	METAL, CHIP 27K 0.50% 1/16W
R237	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R238	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R239	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R240	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R241	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R242	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R243	1-218-883-11	s	METAL, CHIP 33K 0.50% 1/16W
R244	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R245	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R246	1-216-817-11	s	METAL, CHIP 470 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R247	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R248	1-216-797-11	s	METAL, CHIP 10 5% 1/16W
R249	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R250	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R251	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R254	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R255	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R256	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R257	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R258	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R259	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R261	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R262	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R263	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R264	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R265	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R266	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R267	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R268	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R269	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R270	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R271	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R272	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R273	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R274	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R275	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R276	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R277	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R278	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R279	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R282	1-216-816-11	s	METAL, CHIP 390 5% 1/16W
R283	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R284	1-218-840-11	s	METAL, CHIP 510 0.50% 1/16W
R285	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R286	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R287	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R288	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R289	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R290	1-218-840-11	s	METAL, CHIP 510 0.50% 1/16W
R291	1-218-883-11	s	METAL, CHIP 33K 0.50% 1/16W
R292	1-218-880-11	s	RES, CHIP 24K 0.5% 1/16W
R293	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R294	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R295	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R296	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R297	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R298	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R299	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R300	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R301	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R302	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R305	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R306	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R308	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R310	1-218-285-11	s	METAL, CHIP 75 5% 1/16W
R311	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R312	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R313	1-218-847-11	s	RES, CHIP 1K 0.5% 1/16W
R315	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W

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Ref. No. or Q'ty	Part No.	SP	Description
R316	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R317	1-218-285-11	s	METAL, CHIP 75 5% 1/16W
R318	1-216-816-11	s	METAL, CHIP 390 5% 1/16W
R319	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R320	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R321	1-218-840-11	s	METAL, CHIP 510 0.50% 1/16W
R322	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R323	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R325	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R326	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R327	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R328	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R330	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R334	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R335	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R336	1-216-843-11	s	METAL, CHIP 68K 5% 1/16W
R337	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R338	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R339	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R340	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R341	1-218-285-11	s	METAL, CHIP 75 5% 1/16W
R342	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R343	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R344	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R345	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R346	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R347	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R348	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R349	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R350	1-216-824-11	s	METAL, CHIP 1.8K 5% 1/16W
R351	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R352	1-218-881-91	s	METAL, CHIP 27K 0.5% 1/16W
R353	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R355	1-216-847-11	s	METAL, CHIP 150K 5% 1/16W
R356	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R357	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R358	1-218-855-11	s	RES, CHIP 2.2K 0.5% 1/16W
R359	1-216-815-11	s	METAL, CHIP 330 5% 1/16W
R360	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R361	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R362	1-216-811-11	s	METAL, CHIP 150 5% 1/16W
R363	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R364	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R365	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R366	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R367	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R368	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R369	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R370	1-218-875-11	s	RES, CHIP 15K 0.5% 1/16W
R371	1-218-873-11	s	METAL, CHIP 12K 0.50% 1/16W
R372	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R373	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R374	1-216-819-11	s	METAL, CHIP 680 5% 1/16W
R375	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R376	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R377	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R380	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R381	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R382	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W

(PR-229ND BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R383	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R384	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R385	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R386	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
X201	1-760-320-11	s	CRYSTAL
X202	1-760-314-11	s	CRYSTAL 11.89510400MHz
X203	1-579-994-12	s	CRYSTAL 14.31818MHz

PS-477 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	7-621-772-30	s	SCREW +B 2x6
1pc	7-622-205-05	s	NUT M2 TYPE2
C801	1-117-205-11	s	TANTAL 3.3uF 20% 50V
C802	1-163-021-91	s	CERAMIC 0.01uF 10% 50V
C803	1-107-876-11	s	ELECT 330uF 20% 10V
C804	1-107-876-11	s	ELECT 330uF 20% 10V
C805	1-107-894-11	s	ELECT 220uF 20% 35V
C806	1-163-259-91	s	CERAMIC 220pF 5% 50V
C807	1-126-403-11	s	ELECT 3.3uF 20% 50V
C808	1-107-914-11	s	ELECT 1000uF 20% 35V
C809	1-163-021-91	s	CERAMIC 0.01uF 10% 50V
C810	1-126-168-11	s	ELECT 1000uF 25% 6.3
C811	1-126-398-11	s	ELECT, CHIP 4.7uF 20% 35V
C812	1-163-021-91	s	CERAMIC 0.01uF 10% 50V
C813	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C814	1-126-398-11	s	ELECT, CHIP 4.7uF 20% 35V
C815	1-126-400-11	s	ELECT, CHIP 22uF 20% 35V
C816	1-163-037-11	s	CERAMIC, CHIP 0.022uF 10% 25V
C817	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C818	1-163-131-00	s	CERAMIC, CHIP 390PF 5% 50V
C819	1-163-253-11	s	CERAMIC, CHIP 120PF 5% 50V
C820	1-163-251-11	s	CERAMIC, CHIP 100PF 5% 50V
C821	1-126-391-11	s	ELECT, CHIP 47uF 20% 6.3V
C822	1-163-133-00	s	CERAMIC, CHIP 470PF 5% 50V
C823	1-110-666-11	s	ELECT 22uF 20% 6.3
C824	1-117-229-11	s	TANTALUM 10uF 20% 10V
C825	1-135-214-11	s	TANTALUM 4.7uF 20% 20V
C826	1-126-390-11	s	ELECT, CHIP 22uF 20% 6.3V
C827	1-135-214-11	s	TANTALUM 4.7uF 20% 20V
C828	1-126-402-11	s	ELECT, CHIP 2.2uF 20% 50V
C829	1-126-397-11	s	ELECT, CHIP 33uF 20% 25V
C830	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C831	1-164-004-11	s	CERAMIC, CHIP 0.1uF 10% 25V
C832	1-110-666-11	s	ELECT 22uF 20% 6.3
C833	1-126-396-11	s	ELECT, CHIP 47uF 20% 16V
C834	1-117-205-11	s	TANTAL 3.3uF 20% 50V
C836	1-164-161-11	s	CERAMIC, CHIP 0.0022uF 10% 100V
C837	1-125-990-11	s	TANTALUM, CHIP 47uF 20% 20V
C838	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
C839	1-104-852-11	s	TANTALUM, CHIP 22uF 20% 10V
CN801	1-766-290-21	s	CONNECTOR, FPC 14P, FEMALE
CN802	1-580-057-11	o	PIN, CONNECTOR 4P
CN803	1-569-119-11	s	CONNECTOR, FPC (Z1F(I)TYPE)16P
D801	8-719-510-11	s	DIODE D1FS4
D802	8-719-059-51	s	DIODE MA3J142E0LSO
D803	8-719-510-11	s	DIODE D1FS4
D804	8-719-036-65	s	DIODE RD2.0SB-T1
D805	8-719-017-77	s	DIODE MA8030
D806	8-719-027-78	s	DIODE MA796
IC801	8-759-260-57	s	IC TL1451ACPW-E05
IC802	8-759-082-61	s	IC TC4W53FU
IC803	8-759-710-88	s	IC NJM431U
IC804	8-759-054-12	s	IC PQ09RF11
L801	1-411-227-21	s	INDUCTOR 100uH
L802	1-424-653-11	s	COIL, CHOKE 10uH
L803	1-412-030-11	s	INDUCTOR CHIP 22uH
L804	1-411-227-21	s	INDUCTOR 100uH

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Ref. No. or Q'ty	Part No.	SP	Description
L805	1-414-265-21	s	INDUCTOR 4.7uH
L806	1-414-275-11	s	INDUCTOR 220uH
L807	1-414-275-11	s	INDUCTOR 220uH
L808	1-412-027-11	s	INDUCTOR CHIP 2.2uH
L809	1-412-030-11	s	INDUCTOR CHIP 22uH
L810	1-412-030-11	s	INDUCTOR CHIP 22uH
Q801	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q802	8-729-231-74	s	TRANSISTOR 2SC4116GL
Q803	8-729-028-73	s	TRANSISTOR DTA114EUA-T106
Q804	8-729-028-73	s	TRANSISTOR DTA114EUA-T106
Q805	8-729-402-13	s	TRANSISTOR XN1501
Q806	8-729-231-74	s	TRANSISTOR 2SC4116GL
Q807	8-729-230-49	s	TRANSISTOR 2SC2712-YG
Q808	8-729-230-60	s	TRANSISTOR 2SA1586YG
Q809	8-729-216-22	s	TRANSISTOR 2SA1162
Q810	8-729-230-49	s	TRANSISTOR 2SC2712-YG
Q811	8-729-804-51	s	TRANSISTOR 2SB1122-S
Q812	8-729-823-83	s	TRANSISTOR FP101
Q813	8-729-144-56	s	TRANSISTOR 2SC3617
Q814	8-729-144-56	s	TRANSISTOR 2SC3617
R801	1-216-091-00	s	METAL, CHIP 56K 5% 1/10W
R802	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R803	1-216-091-00	s	METAL, CHIP 56K 5% 1/10W
R804	1-208-799-11	s	METAL, CHIP 5.1K 0.50% 1/10W
R805	1-216-085-00	s	METAL, CHIP 33K 5% 1/10W
R806	1-216-065-91	s	RES, CHIP 4.7K 5% 1/10W
R807	1-216-057-00	s	METAL, CHIP 2.2K 5% 1/10W
R808	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R809	1-216-069-00	s	METAL, CHIP 6.8K 5% 1/10W
R810	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R811	1-216-065-91	s	RES, CHIP 4.7K 5% 1/10W
R812	1-216-091-00	s	METAL, CHIP 56K 5% 1/10W
R813	1-216-097-91	s	RES, CHIP 100K 5% 1/10W
R814	1-220-256-11	s	RES, CHIP 75 5% 1/4W
R815	1-208-801-11	s	METAL, CHIP 6.2K 0.50% 1/10W
R816	1-216-061-00	s	METAL, CHIP 3.3K 5% 1/10W
R817	1-216-041-00	s	METAL, CHIP 470 5% 1/10W
R818	1-216-097-91	s	RES, CHIP 100K 5% 1/10W
R819	1-216-065-91	s	RES, CHIP 4.7K 5% 1/10W
R820	1-216-069-00	s	METAL, CHIP 6.8K 5% 1/10W
R821	1-216-033-00	s	METAL, CHIP 220 5% 1/10W
R822	1-216-101-00	s	METAL, CHIP 150K 5% 1/10W
R823	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R824	1-216-081-00	s	METAL, CHIP 22K 5% 1/10W
R825	1-216-689-11	s	METAL, CHIP 39K 0.5% 1/10W
R826	1-216-065-91	s	RES, CHIP 4.7K 5% 1/10W
R827	1-216-055-00	s	METAL, CHIP 1.8K 5% 1/10W
R828	1-216-295-91	s	METAL, CHIP 0 5% 1/10W
R829	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R830	1-216-047-91	s	RES, CHIP 820 5% 1/10W
R831	1-208-813-11	s	RES, CHIP 20K 0.5% 1/10W
R832	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R833	1-216-053-00	s	METAL, CHIP 1.5K 5% 1/10W
R834	1-216-061-00	s	METAL, CHIP 3.3K 5% 1/10W
R835	1-216-067-00	s	METAL, CHIP 5.6K 5% 1/10W
R836	1-216-069-00	s	METAL, CHIP 6.8K 5% 1/10W
R837	1-216-065-91	s	RES, CHIP 4.7K 5% 1/10W
R838	1-216-057-00	s	METAL, CHIP 2.2K 5% 1/10W

(PS-477 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R839	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R840	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R841	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R842	1-216-057-00	s	METAL, CHIP 2.2K 5% 1/10W
R843	1-216-037-00	s	METAL, CHIP 330 5% 1/10W
R844	1-216-295-91	s	METAL, CHIP 0 5% 1/10W
R845	1-216-049-91	s	METAL, CHIP 1K 5% 1/10W
R846	1-216-085-00	s	METAL, CHIP 33K 5% 1/10W
R847	1-217-671-11	s	METAL 1 5% 1/10W
R848	1-217-671-11	s	METAL 1 5% 1/10W
R849	1-208-814-11	s	METAL, CHIP 22K 0.50% 1/10W
R850	1-208-802-11	s	RES, CHIP 6.8K 0.5% 1/10W
R851	1-216-085-00	s	METAL, CHIP 33K 5% 1/10W
R852	1-216-079-00	s	METAL, CHIP 18K 5% 1/10W
R853	1-216-073-00	s	METAL, CHIP 10K 5% 1/10W
R854	1-208-830-11	s	RES, CHIP 100K 0.5% 1/10W
R855	1-208-830-11	s	RES, CHIP 100K 0.5% 1/10W
T801	1-450-976-11	s	TRANSFORMER, CONVERTER

FRAME

Ref. No. or Q'ty	Part No.	SP	Description
CN502	1-566-850-11	s	CONNECTOR, (S) TERMINAL 4P
			"S VIDEO OUT"
CN504	1-580-724-11	s	CONNECTOR, BNC
			"A:MONITOR OUT"
			"B:VBS IN, VS IN"
CN505	1-580-724-11	s	CONNECTOR, BNC
			"A:DC IN, VS IN, VIDEO OUT"
			"B:VIDEO OUT"
CN702	1-580-172-11	s	CONNECTOR,MICRO 4P, FEMALE
			"LENS"
HN1	1-790-157-11	o	CABLE, FLEXIBLE FLAT (14 CORE)
HN2	1-766-287-11	s	WIRE, FLEXIBLE CARD
HN3	1-769-275-11	s	WIRE, FLEXIBLE CARD
HN4	1-782-538-11	s	CABLE, FLEXIBLE FLAT (28 CORE)
HN5	1-957-799-11	o	HARNESS (CONNECTOR CB1)

PACKING MATERIALS & SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP	Description
1pc	1-580-173-11	s	CONNECTOR, MICRO (PLUG) 4P
1pc	3-205-662-11	s	OPERATING INSTRUCTION

Section 6
Semiconductor Pin Assignments

The following describes the semiconductor types used in this unit.
For semiconductors marked with page numbers in the index, refer to the corresponding pages in this section. However, in some cases incompatible types are also listed, therefore, when a part is to be replaced, also refer to the Spare Parts section.
In addition, for semiconductors with ID Nos., refer to the separate CD-ROM titled “Semiconductor Pin Assignments” (Sony Part No. 9-968-546-xx) that allows searching for parts by semiconductor type or ID No.
The semiconductors in the manual or on the CD-ROM are listed by equivalent types. Thus the external view or the index mark indication may differ from the actual type.
Pin assignments and block diagrams are based on the IC manufacturer’s data book.

本機に使用されている半導体型名の一覧を下記に示します。
索引中，ページが記載されている半導体は，本章の該当ページを参照してください。ただし，互換性のない型名を併記している場合がありますので，部品を交換するときは，Spare Partsの章を参照してください。
また，ID番号が記載されている半導体は，別途発行の “Semiconductor Pin Assignments” CD−ROM版 (ソニー部品番号：9−968−546−xx)を参照してください。
半導体型名またはID番号から検索ができます。
マニュアルまたはCD−ROMに掲載されている半導体は，それぞれの機能を等価的に表わしたものです。
外観やインデックスマークの表示方法が実物と異なる場合があります。
ピン配置およびブロック図はICメーカーのデータブックに従いました。

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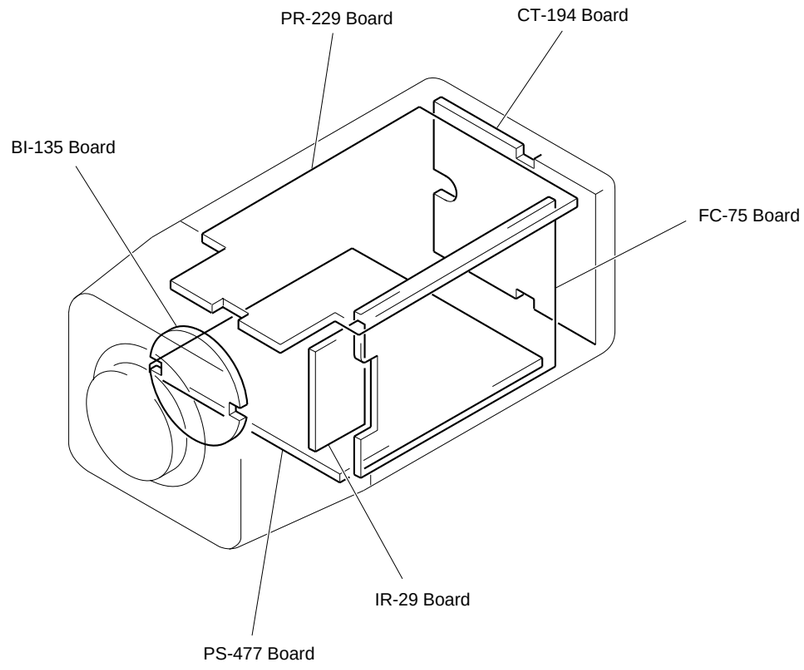
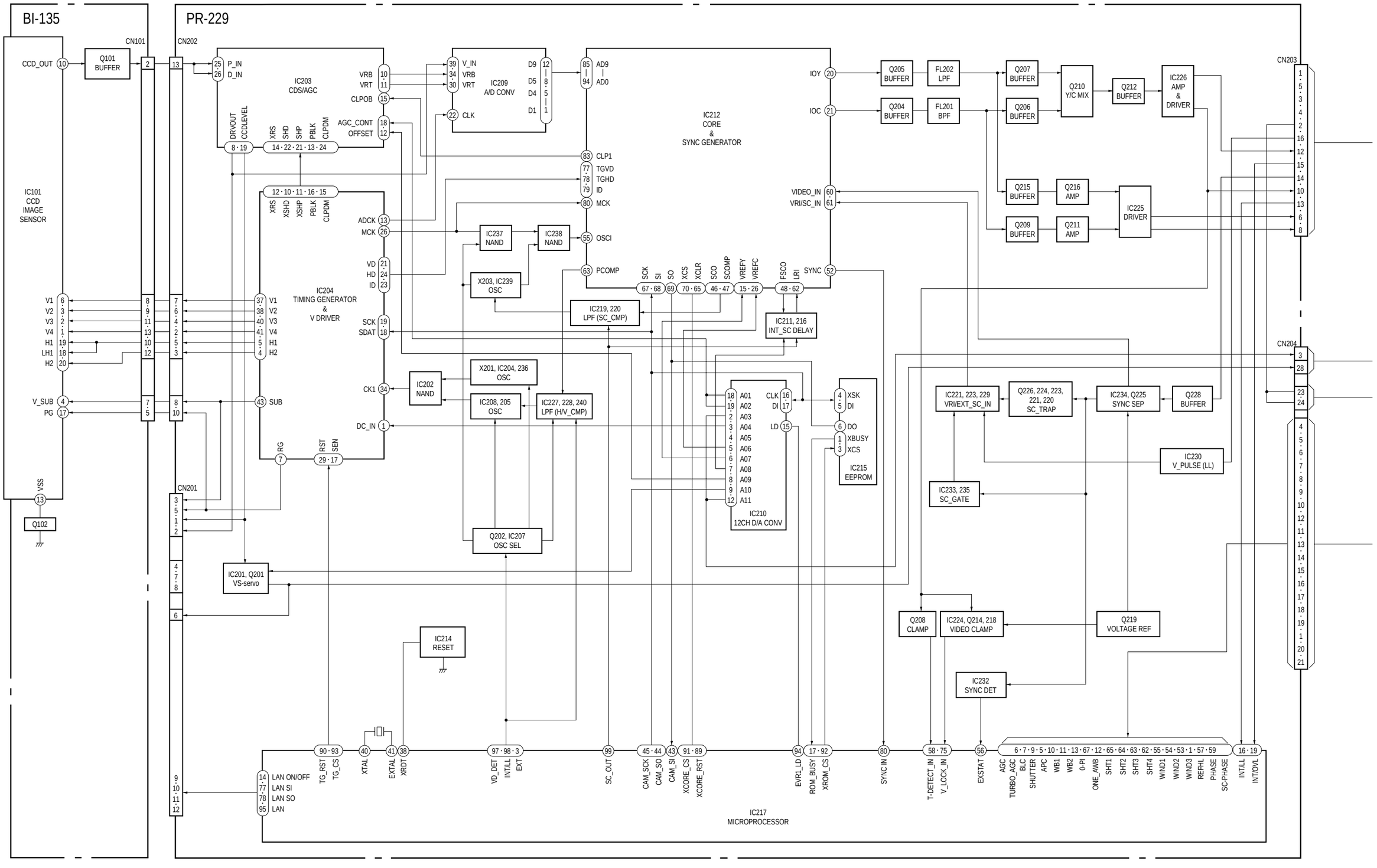
Section 7
Block Diagrams

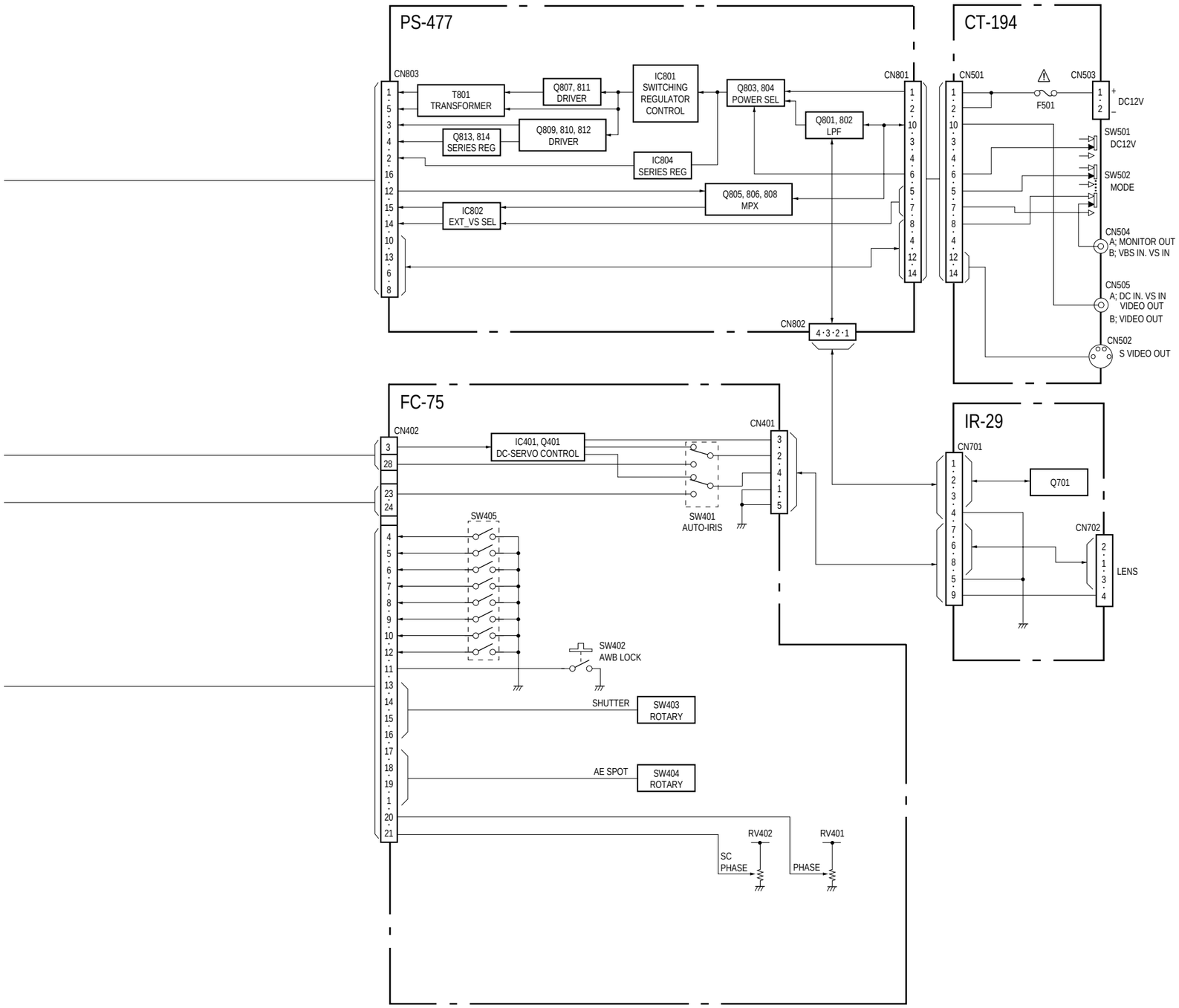
7-1. Board Location

DXC-190



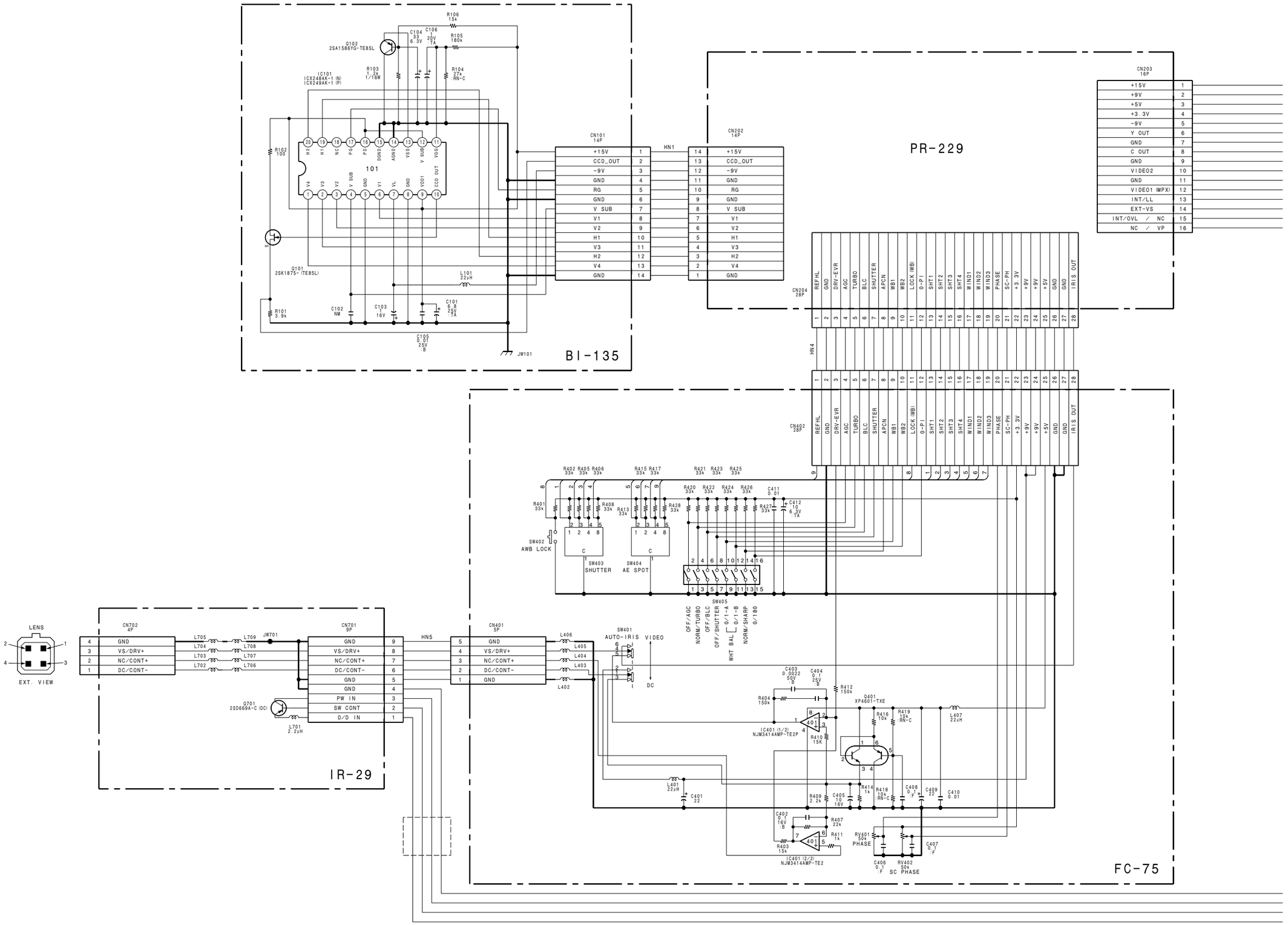
7-2. Block Diagram



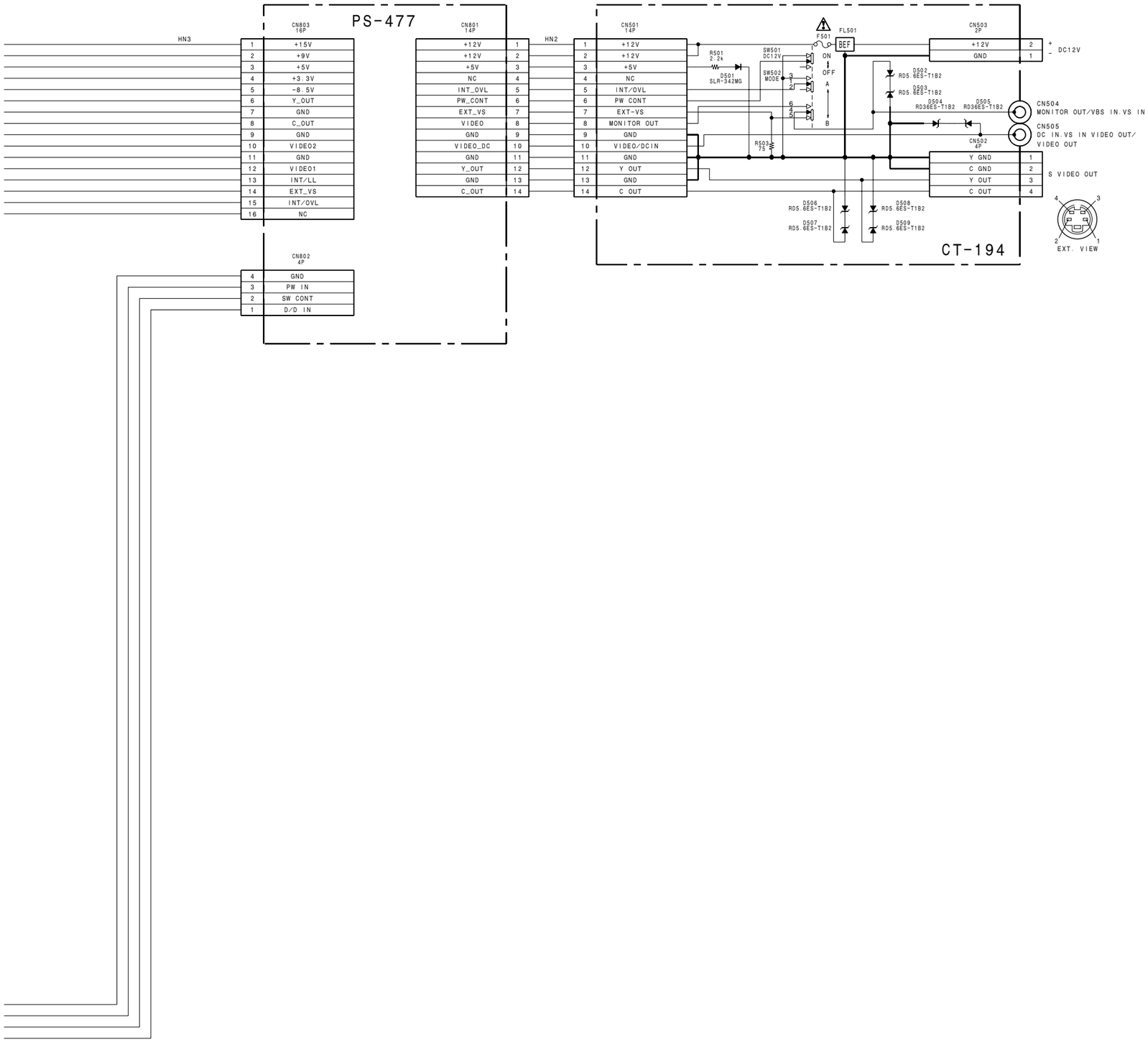

PS-477
CN803
T801 TRANSFORMER
Q807, 811 DRIVER
IC801 SWITCHING REGULATOR CONTROL
Q803, 804 POWER SEL
CN801
Q801, 802 LPF
Q809, 810, 812 DRIVER
Q813, 814 SERIES REG
IC804 SERIES REG
Q805, 806, 808 MPX
IC802 EXT_VS SEL
CN802
4·3·2·1
CT-194
CN501
F501
CN503
DC12V
SW501 DC12V
SW502 MODE
CN504 A; MONITOR OUT B; VBS IN. VS IN
CN505 A; DC IN. VS IN VIDEO OUT B; VIDEO OUT
CN502 S VIDEO OUT
FC-75
CN402
CN401
IC401, Q401 DC-SERVO CONTROL
SW401 AUTO-IRIS
SW405
SW402 AWB LOCK
SHUTTER
SW403 ROTARY
AE SPOT
SW404 ROTARY
RV402
SC PHASE
RV401
PHASE
IR-29
CN701
Q701
CN702
LENS

Section 8
Schematic Diagrams

Frame Wiring, BI-135, CT-194, FC-75, IR-29

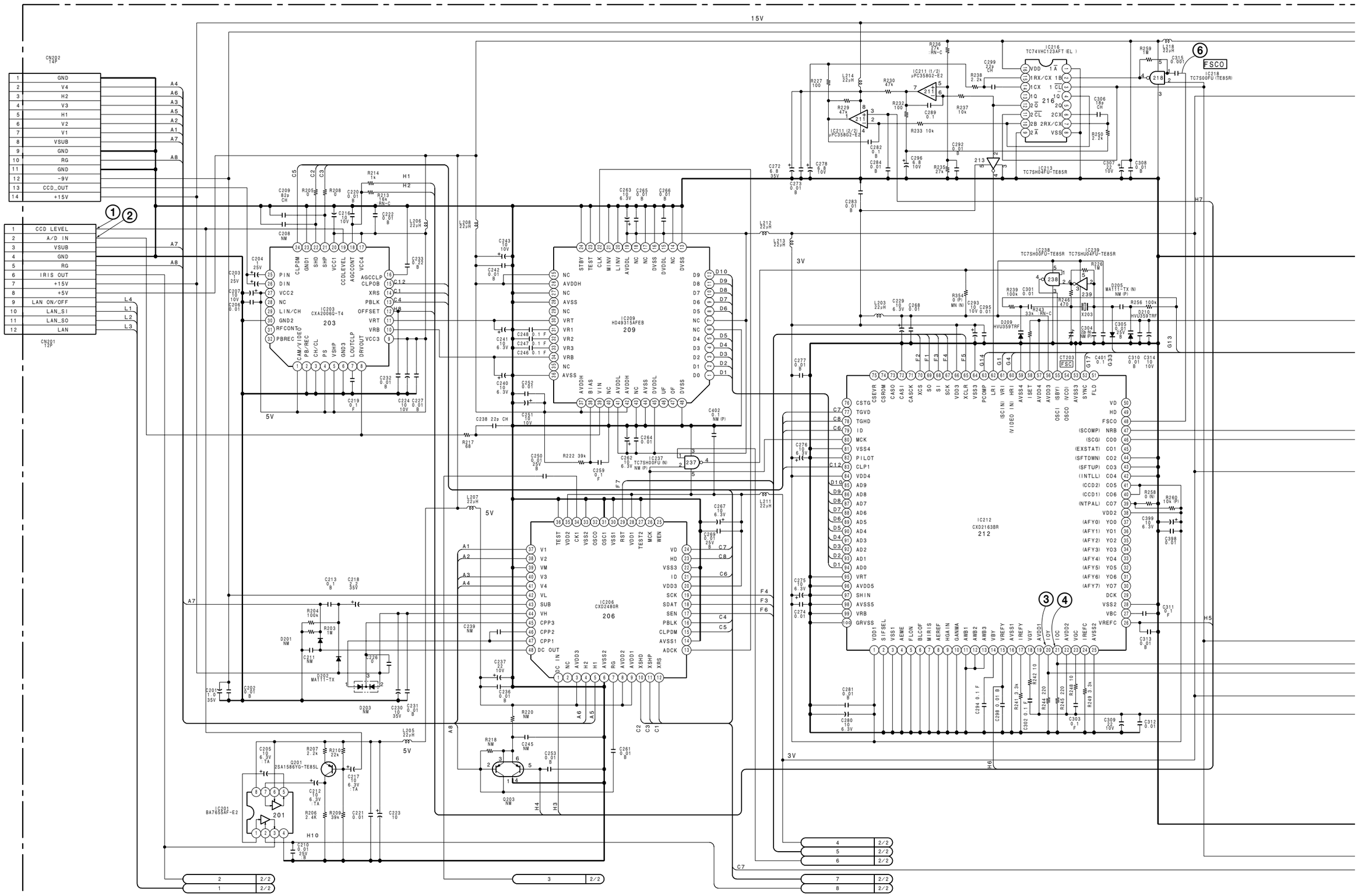


Frame Wiring, BI-135, CT-194, FC-75, IR-29



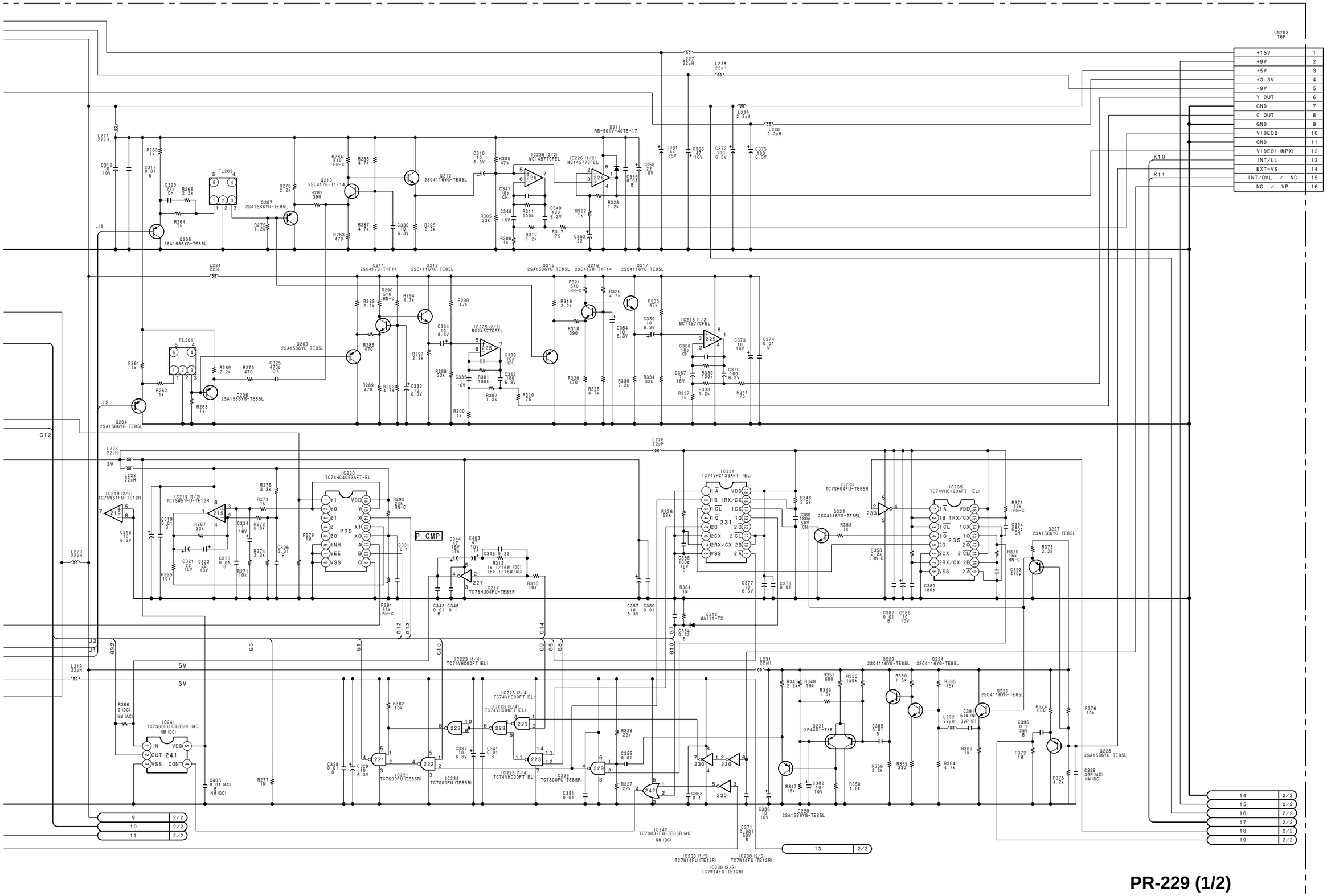
IR-29
FC-75
CT-194
BI-135
Frame Wiring

PR-229 (1/2)



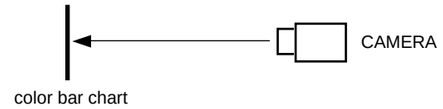
8-4

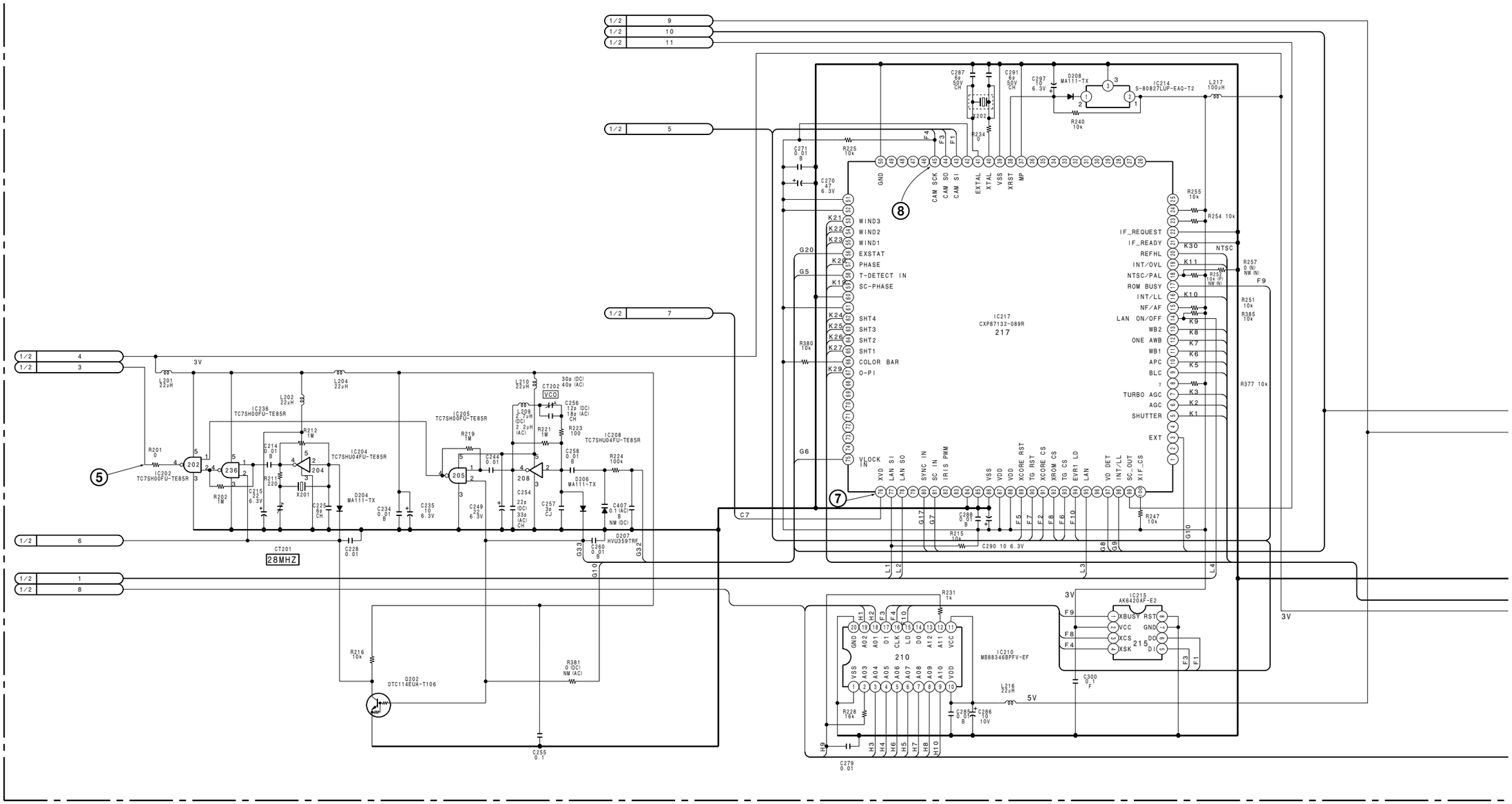
DXC-190


CN203
16P
+15V 1
+9V 2
+5V 3
+3.3V 4
-9V 5
Y OUT 6
GND 7
C OUT 8
GND 9
VIDEO2 10
GND 11
VIDEO1 (MPX) 12
INT/LL 13
EXT-VS 14
INT/OVL / NC 15
NC / VP 16
K10
K11
J1
J2
G12
5V
3V
P_CMP
9 2/2
10 2/2
11 2/2
13 2/2
14 2/2
15 2/2
16 2/2
17 2/2
18 2/2
19 2/2
PR-229 (1/2)

PR-229 (2/2)

- Waveforms are taken with a oscilloscope.
- Circled numbers refer to waveforms.
- Waveforms are measured in condition below.

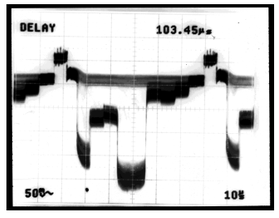




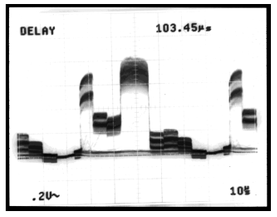
PR-229 (2/2)

Waveform —PR 229—

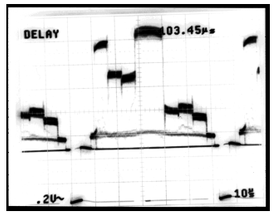
①



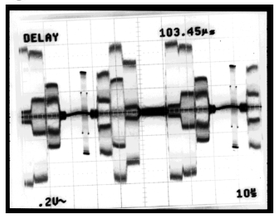
②



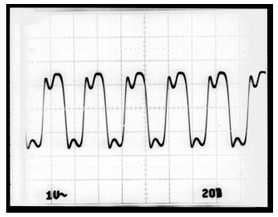
③



④



⑤



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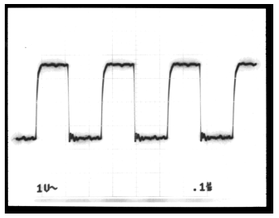
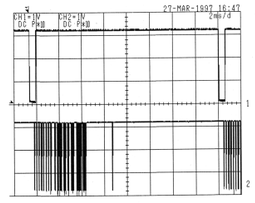
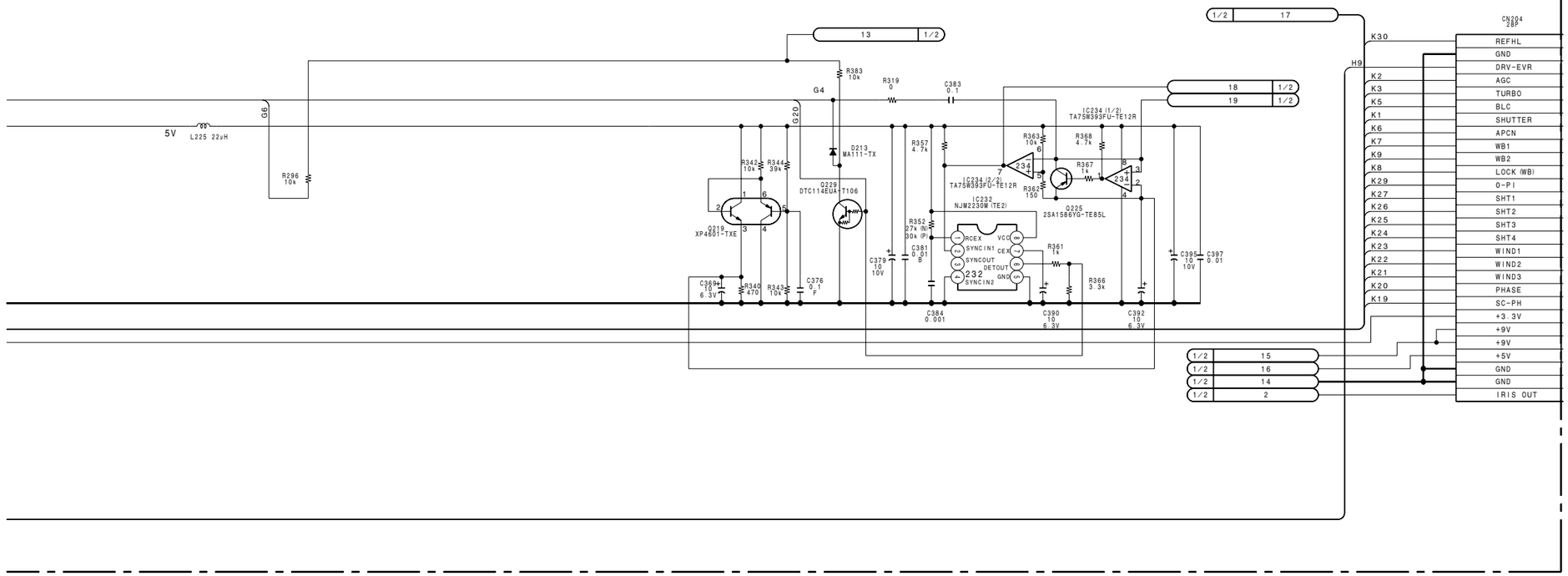


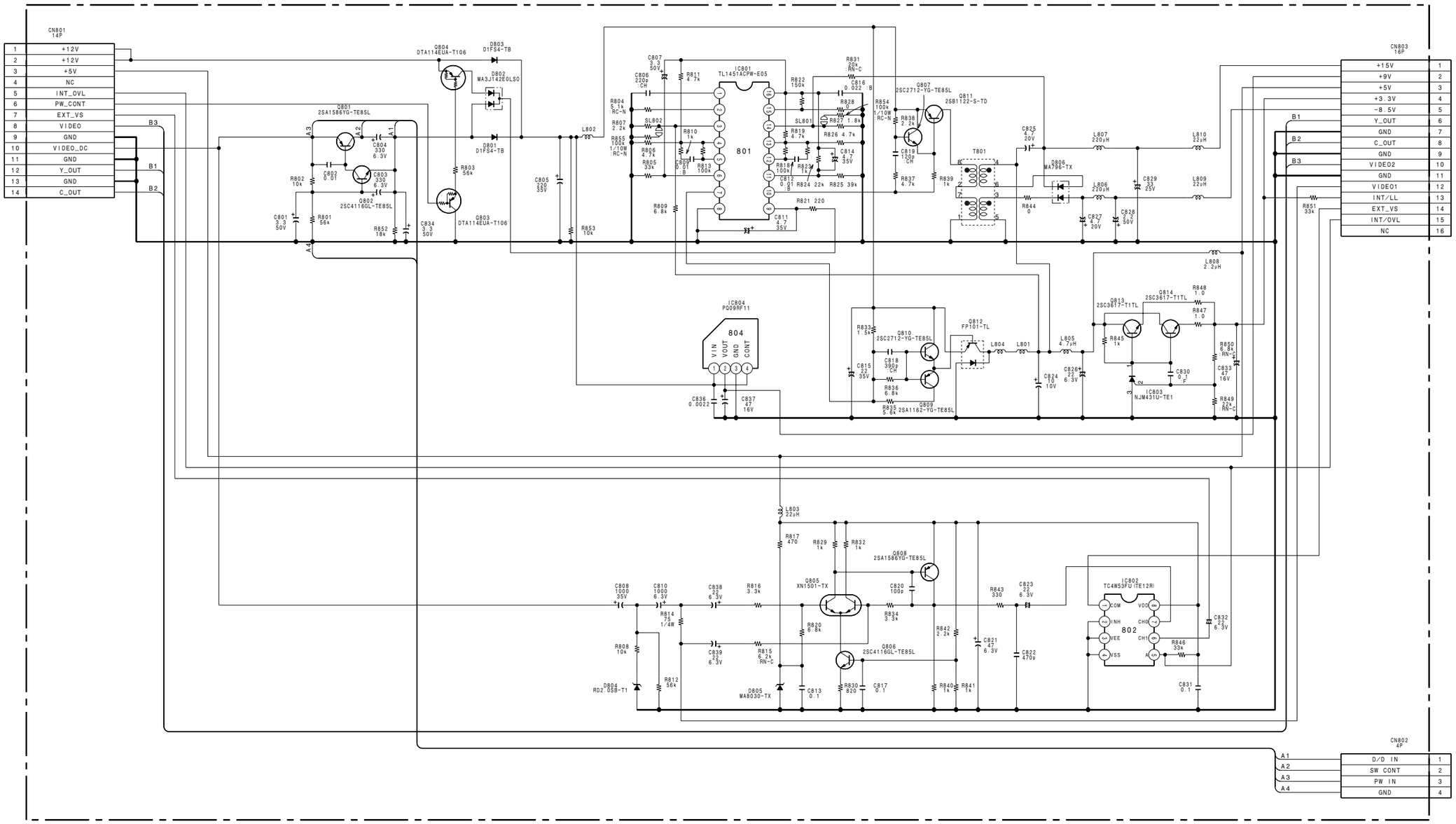
⑦

⑧





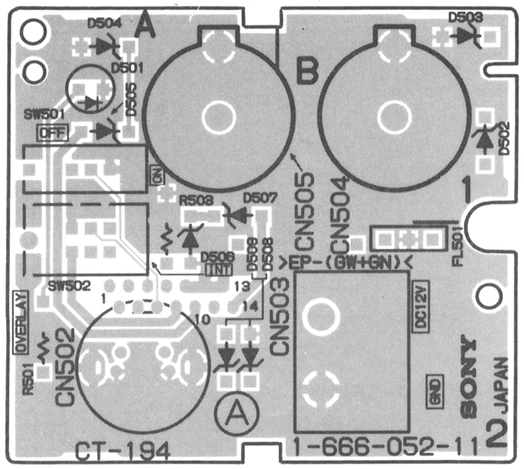
PR-229 (2/2)


CN801 14P
+12V
+12V
+5V
NC
INT_OVL
PW_CONT
EXT_VS
VIDEO
GND
VIDEO_DC
GND
Y_OUT
GND
C_OUT
Q801 2SA1586YG-TE85L
Q802 2SC4116GL-TE85L
Q803 DTA114EUA-T106
Q804 DTA114EUA-T106
D801 DTS4-TB
D802 MA3J142E0LSO
D803 DTS4-TB
IC801 TL1451ACPW-E05
801
Q807 2SC2712-YG-TE85L
Q811 2SB1122-S-TD
T801
D806 MA796-TX
CN803 16P
+15V
+9V
+5V
+3.3V
-8.5V
Y_OUT
GND
C_OUT
GND
VIDEO2
GND
VIDEO1
INT/LL
EXT_VS
INT/OVL
NC
IC804 PQ09RF11
804
VIN VOUT GND CONT
Q809 2SA1162-YG-TE85L
Q810 2SC2712-YG-TE85L
Q812 FP101-TL
Q813 2SC3617-T1TL
Q814 2SC3617-T1TL
IC803 NJM431U-TE1
L803 22µH
Q808 2SA1586YG-TE85L
Q805 XN1501-TX
Q806 2SC4116GL-TE85L
D804 RD2.0SB-T1
D805 MA8030-TX
IC802 TC4W53FU(TE12R)
802
COM
INH
VEE
VSS
VDD
CH0
CH1
CN802 4P
D/D IN
SW CONT
PW IN
GND
B1
B2
B3
A1
A2
A3
A4

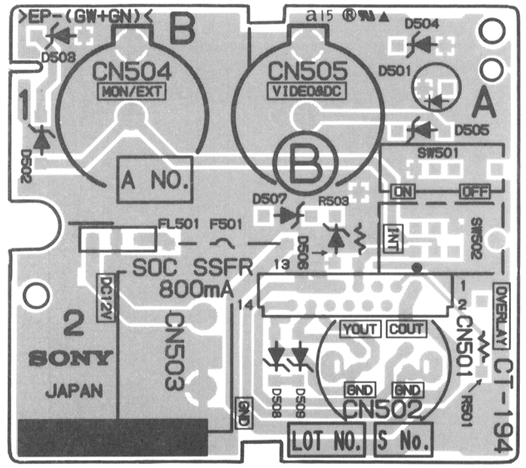
PS-477

BI-135, CT-194, FC-75, IR-29

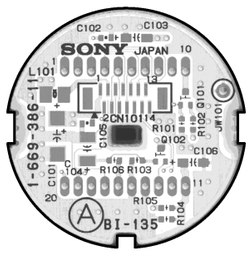
Section 9
Board Layouts



CT-194 -A SIDE-
SUFFIX: -11



CT-194 -B SIDE-
SUFFIX: -11



BI-135 -A SIDE-
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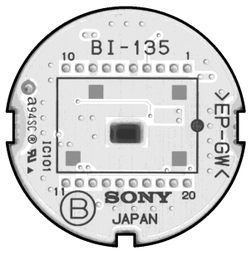

BI-135 -B SIDE-
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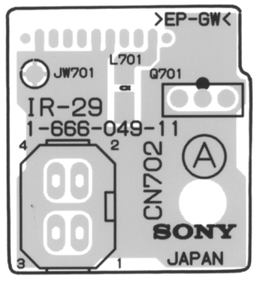

IR-29 -A SIDE-
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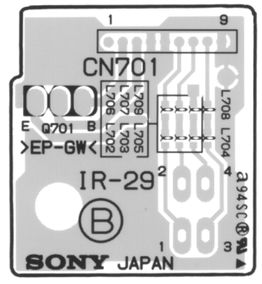
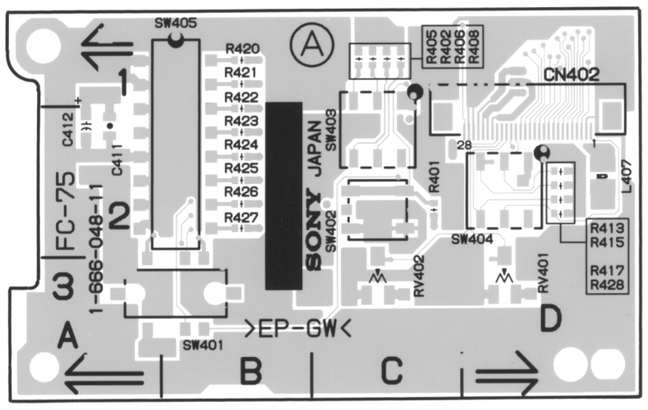


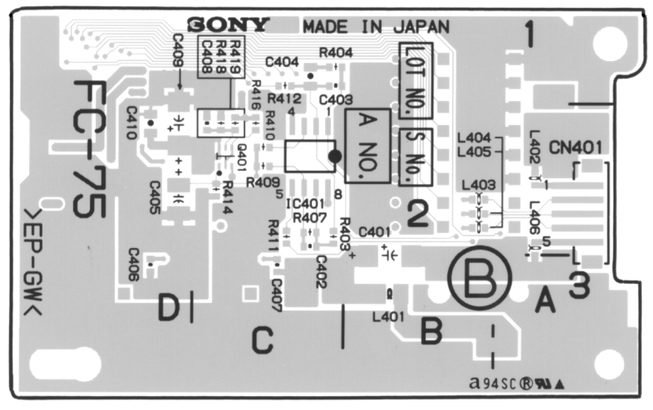
IR-29 -B SIDE-
SUFFIX: -11



FC-75 -A SIDE-
SUFFIX: -11

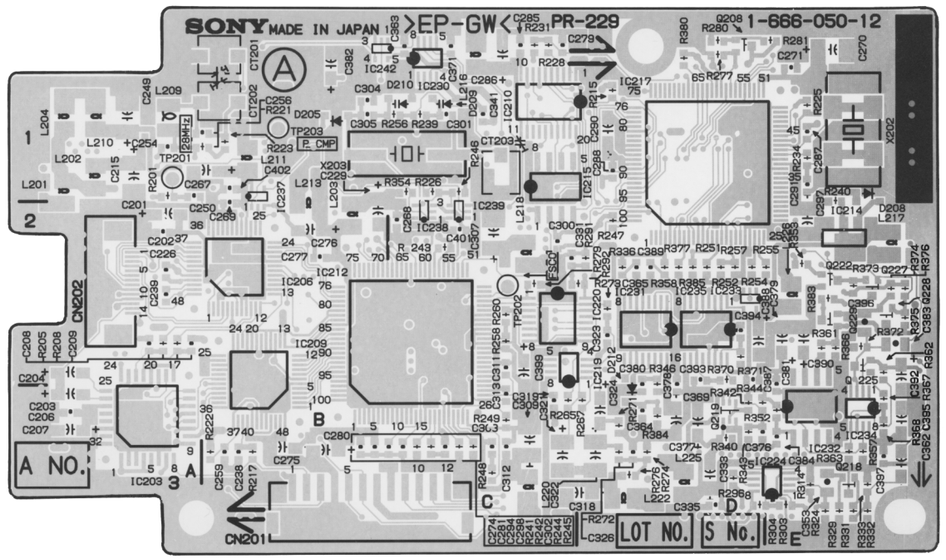
FC-75(1-666-048-11)

```
CN401 *A2
CN402  D2

IC401 *C2

L401  *B3
L402  *A2
L403  *B2
L404  *B2
L405  *B2
L406  *A2
L407   D2

Q401  *C2

RV401  D3
RV402  C3

SW401  B3
SW402  C2
SW403  C2
SW404  D2
SW405  A1

*: B SIDE
```



FC-75 -B SIDE-
SUFFIX: -11

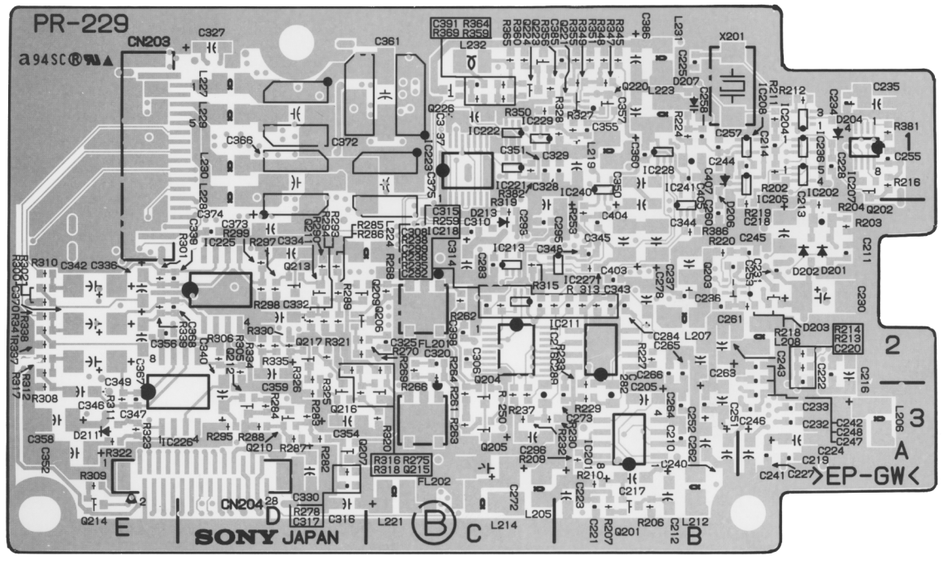
9-1



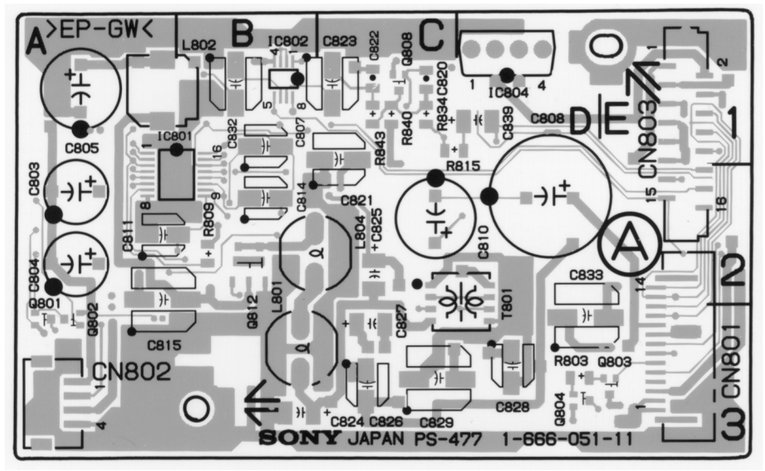
PR-229 -A SIDE-
SUFFIX: -12

PR-229(1-166-050-12)

CN201	B3	D210	C1	IC211	*B2	IC229	*C1	L204	A1	L223	*B1	Q208	D1	Q226	*C1
CN202	A2	D211	*E3	IC212	C2	IC230	C1	L205	*C3	L224	*C2	Q209	*D2	Q227	E2
CN203	*E1	D212	D3	IC213	*C2	IC231	D2	L206	*A3	L225	D3	Q210	*D3	Q228	E2
CN204	*D3	D213	*C2	IC214	E2	IC232	E3	L207	*B2	L226	E2	Q211	*D2	Q229	E2
				IC215	C1	IC233	D2	L208	*A2	L227	*D1	Q212	*D3		
CT201	B1	FL201	*C2	IC216	*C2	IC234	E3	L209	A1	L228	*D1	Q213	*D2	X201	*B1
CT202	B1	FL202	*C3	IC217	D1	IC235	D2	L210	A1	L229	*D1	Q214	*E3	X202	E1
CT203	C1			IC218	*C2	IC236	*A1	L211	B1	L230	*D1	Q215	*C3	X203	C1
		IC201	*B3	IC219	C2	IC237	B1	L212	*B3	L231	*B1	Q216	*D3		
D201	*A2	IC202	*A1	IC220	C2	IC238	C2	L213	B1	L232	*C1	Q217	*D2	*: B SIDE	
D202	*A2	IC203	A3	IC221	*C1	IC239	C2	L214	*C3			Q218	E3		
D203	*A2	IC204	*A1	IC222	*C1	IC240	*B1	L216	C1	Q201	*B3	Q219	D3		
D204	*A1	IC205	*A1	IC223	*C1	IC241	*B1	L217	E2	Q202	*A1	Q220	*B1		
D205	B1	IC206	B2	IC224	E3	IC242	B1	L218	C2	Q203	*B2	Q221	*B1		
D206	*B1	IC207	*A1	IC225	*D2			L219	*B1	Q204	*C3	Q222	E2		
D207	*B1	IC208	*A1	IC226	*D3	L201	A1	L220	C3	Q205	*C3	Q223	*C1		
D208	E1	IC209	B2	IC227	*B2	L202	A1	L221	*C3	Q206	*D2	Q224	*C1		
D209	C1	IC210	C1	IC228	*B1	L203	B2	L222	D3	Q207	*D3	Q225	E2		



PR-229 -B SIDE-
SUFFIX: -12

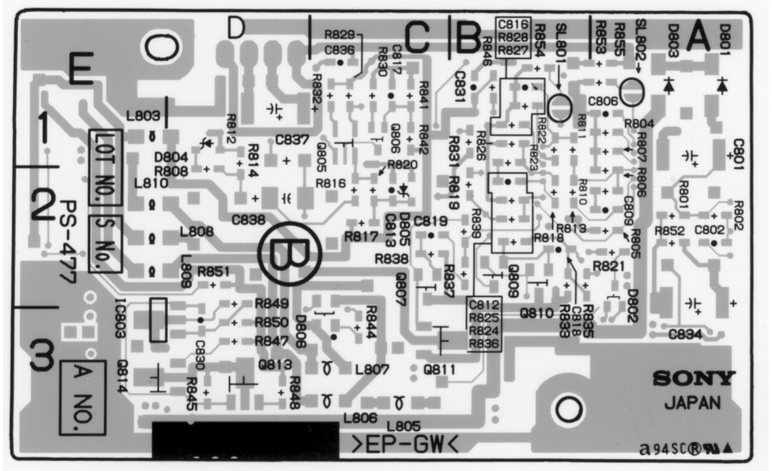


PS-477 -A SIDE-
SUFFIX: -11

PS-477(1-666-051-11)

CN801	E3	Q801	A3	D801	*A1	D805	*C2	IC801	B2	L801	B3	L803	*E1	L807	*C3
CN802	A3	Q802	A3	D802	*A2	D806	*C3	IC802	B1	L802	A1	L804	C2	L808	*E2
CN803	E1	Q803	E3	D803	*A1			IC803	*E3			L805	*C3	L809	*E2
		Q804	D3	D804	*D1							L806	*C3	L810	*E2
		Q805	*C1												
		Q806	*C1												
		Q807	*C2												
		Q808	C1												
		Q809	*B2												
		Q810	*B2												
		Q811	*C3												
		Q812	B2												
		Q813	*D3												
		Q814	*E3												
		T801	D2												

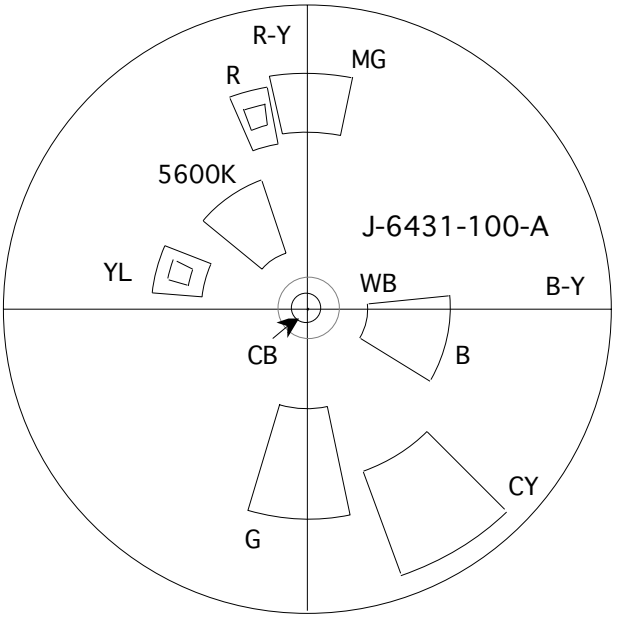
*: B SIDE



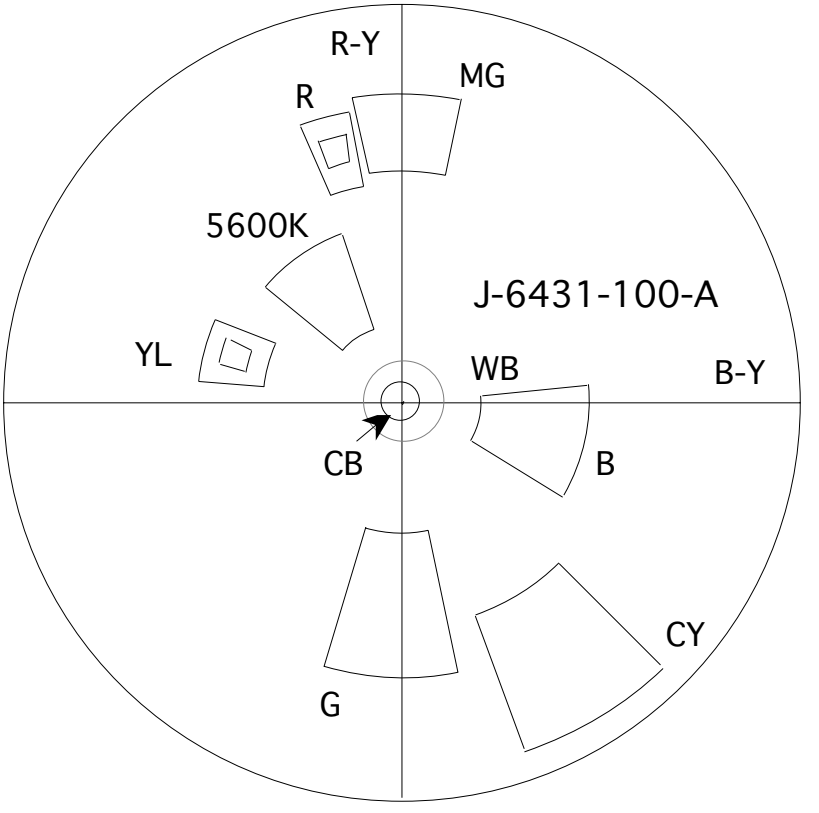
PS-477 -B SIDE-
SUFFIX: -11

VECTORSCOPE SCALE

Diameter 80mm



Diameter 106mm



DXC-190 (UC) E
9-955-284-01

Sony Corporation
Communication System Solutions Network Company

Printed in Japan
2001. 3 26